V2201 Series Windows Software User's Manual

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V2201 Series Windows Software User's Manual

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Technical Support Contact Information

www.moxa.com/support

Moxa Americas
Toll-free: 1-888-669-2872
Tel: +1-714-528-6777
Fax: +1-714-528-6778

Moxa Europe
Tel: +49-89-3 70 03 99-0
Fax: +49-89-3 70 03 99-99

Moxa India
Tel: +91-80-4172-9088
Fax: +91-80-4132-1045

Moxa China (Shanghai office)
Toll-free: 800-820-5036
Tel: +86-21-5258-9955
Fax: +86-21-5258-5505

Moxa Asia-Pacific
Tel: +886-2-8919-1230
Fax: +886-2-8919-1231

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1

Introduction

Thank you for purchasing a Moxa V2201 panel computer running the Windows 7 Embedded operating system. The Windows 7 Embedded OS provides a simple and familiar development environment for a variety of industrial applications.

Software Components

The following software components of the Windows Embedded Standard 7 OS come pre-installed on the V2201 computer.

Windows Embedded Standard 7

Core OS:

• 64-bit supported
• Remote Client
• Remote Procedure Call

Applications and Services Development:

• Remote Desktop Protocol 7.1
• COM OLE Application Support
• COM+ Application Support
• MSMQ

Internet Services:

• Internet Explorer 8
• IIS 7.0

File Systems and Data Storage:

• Windows Data Access Components
• Windows Backup and Restore

Diagnostics:

• Common Diagnostic Tools
• Problem Reports and Solutions

Fonts: Western, Middle Eastern, South East Asian, and South Asian Fonts

Graphics and Multimedia:

• MPEG Layer-3 Audio Codecs (MP3)
• MPEG4 Decoders
• DirectX and Windows Device Experience

Management:

• Group Policy Management
• Windows Management Instrument (WMI)
• Windows Update

Networking:

- Extensible Authentication Protocol (EAP)
- Internet Authentication Service
- Telnet Server
- Bluetooth
- Domain Services
- Network Access Protection
- Network and Sharing Center
- Quality of Service
- Remote Access Service (RAS)
- Telephony API Client
- Windows Firewall
- Wireless Networking

Security:

- Credential Roaming Service
- Credentials and Certificate Management
- Windows Authorization Manager (AZMAN)
- Windows Security Center
- Active Directory Rights Management
- Security Base
- Encrypted File System (EFS)

Embedded Features:

- Enhanced Write Filter (EWF)
- File-Based Write Filter (FBWF)
- Registry Filter
- WSDAPI for .NET

Embedded Self-Health Diagnostic Software: Moxa Proactive Monitoring & Moxa SmartRecovery

2

System Initialization

In this chapter, we describe how to initialize the system settings on the V2201 embedded computer when booting up for the first time.

The following topics are covered in this chapter:

- **Overview**
- **Initializing User Settings**

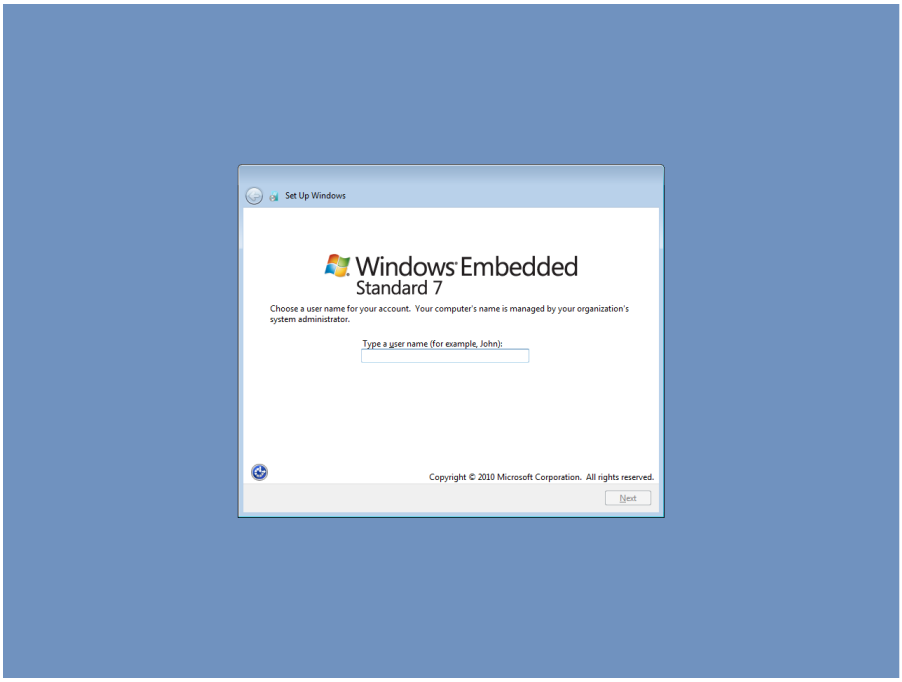
Overview

Similar to using a laptop computer for the first time, you need to specify a user name and create a user account to start using the V2201 embedded computer. Follow the procedure described in the next section.

NOTE If you perform a system recovery on the V2201 embedded computer, the system automatically resets to the factory defaults. You must initialize the user settings again.

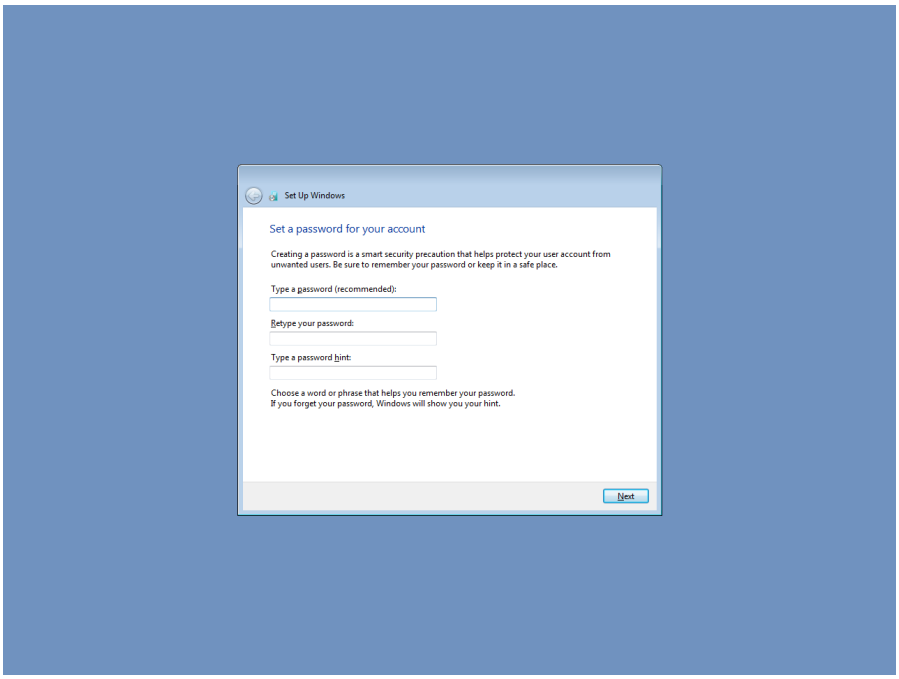
Initializing User Settings

1. When you turn on the embedded computer for the first time, enter a user name for the computer.

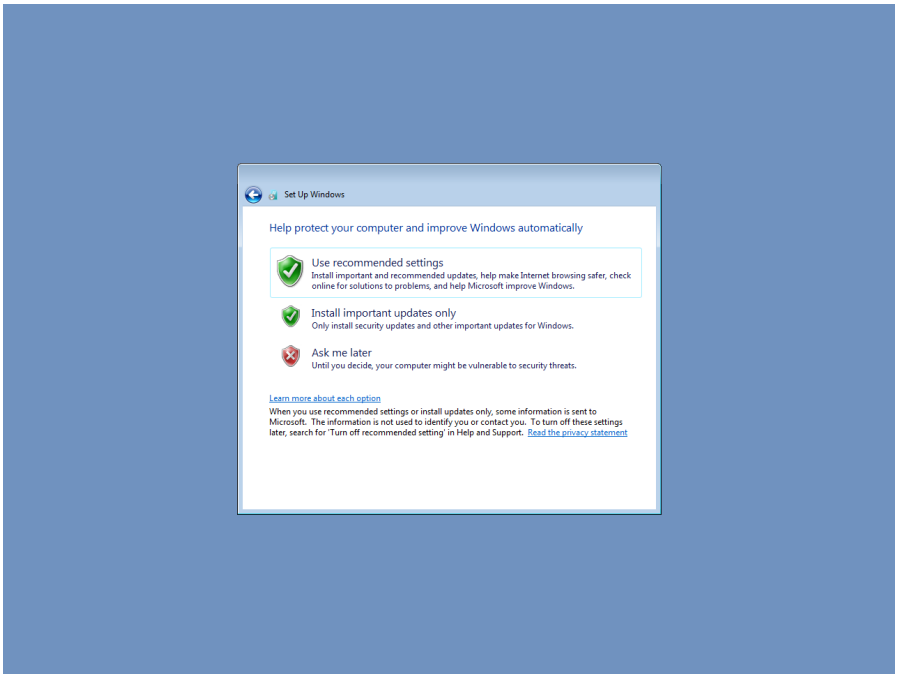

Set Up Windows
Windows Embedded
Standard 7
Choose a user name for your account. Your computer's name is managed by your organization's system administrator.
Type a user name (for example, John):
Copyright © 2010 Microsoft Corporation. All rights reserved.
Next

2. Type a password and retype the password to confirm.

   You may also type a password hint that you can refer to if you forget your password. If you do not want to set a password, leave all three fields blank. Click **Next** to continue.

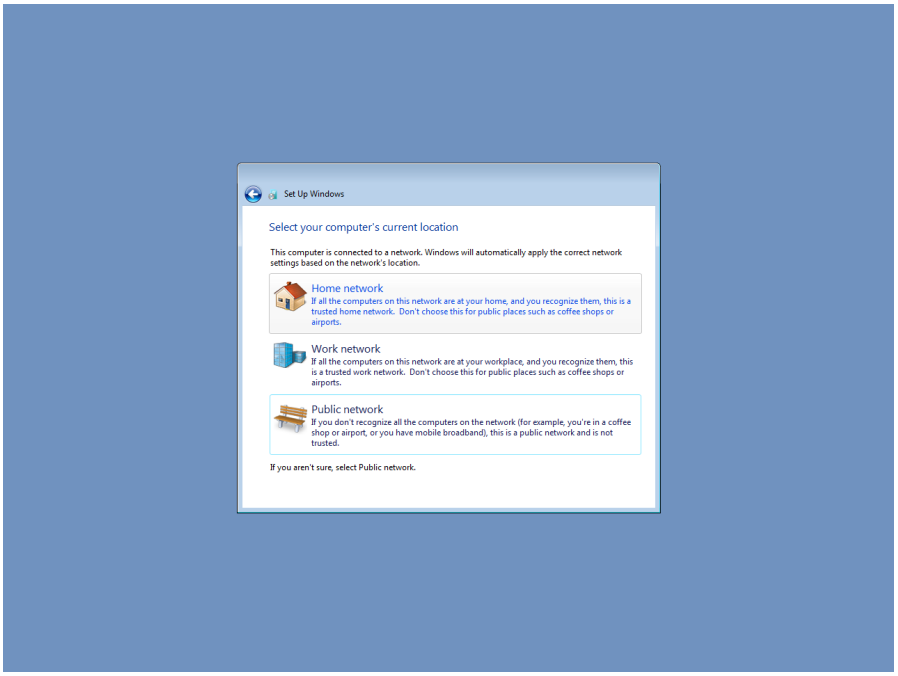

Set Up Windows
Set a password for your account
Creating a password is a smart security precaution that helps protect your user account from unwanted users. Be sure to remember your password or keep it in a safe place.
Type a password (recommended):
Retype your password:
Type a password hint:
Choose a word or phrase that helps you remember your password.
If you forget your password, Windows will show you your hint.
Next

3. Select a Windows update option.


Set Up Windows
Help protect your computer and improve Windows automatically
Use recommended settings
Install important and recommended updates, help make Internet browsing safer, check online for solutions to problems, and help Microsoft improve Windows.
Install important updates only
Only install security updates and other important updates for Windows.
Ask me later
Until you decide, your computer might be vulnerable to security threats.
Learn more about each option
When you use recommended settings or install updates only, some information is sent to Microsoft. The information is not used to identify you or contact you. To turn off these settings later, search for 'Turn off recommended setting' in Help and Support. Read the privacy statement

4. Select the computer's current location.

   Windows automatically applies the appropriate network settings based on the type of network you select.


Set Up Windows
Select your computer's current location
This computer is connected to a network. Windows will automatically apply the correct network settings based on the network's location.
Home network
If all the computers on this network are at your home, and you recognize them, this is a trusted home network. Don't choose this for public places such as coffee shops or airports.
Work network
If all the computers on this network are at your workplace, and you recognize them, this is a trusted work network. Don't choose this for public places such as coffee shops or airports.
Public network
If you don't recognize all the computers on the network (for example, you're in a coffee shop or airport, or you have mobile broadband), this is a public network and is not trusted.
If you aren't sure, select Public network.

5. When the Windows desktop screen appears, you can start using your V2201 embedded computer.

3

Configuring the Serial Interface

This chapter describes how to configure the serial interface on the V2201 embedded computer.

The following topics are covered in this chapter:

- **Overview**
- **Configuring the Serial Interface Mode**

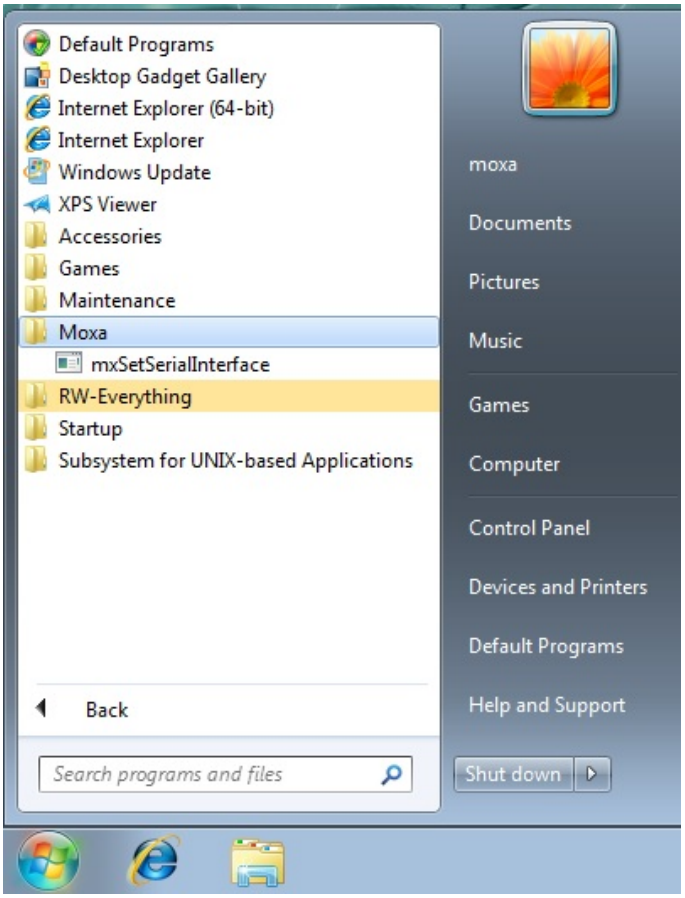
Overview

The V2201 supports the following serial modes: **RS-232, RS-485-2-wire** and **RS-422/485-4-wire**. These modes can be configured on COM1 and COM2.

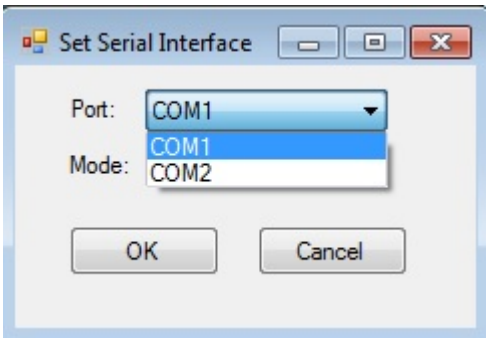
Configuring the Serial Interface Mode

Complete the following steps to configure the serial interface mode:

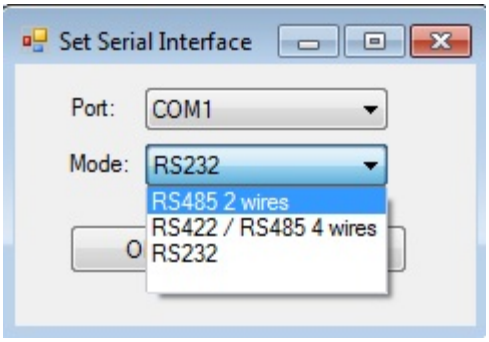
1. From the Start menu, Click **All Programs → Moxa → mxSetSerialInterface**.



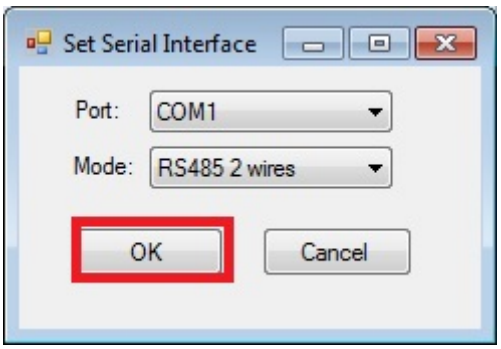
2. Select the port you would like to configure from the **Port** drop-down box



3. Select the serial interface mode for the port from the **Mode** drop-down box



4. Click **OK**.



4

Enabling Embedded Filters

In this chapter, we describe how to enable the V2201's embedded filters.

The following topics are covered in this chapter:

- **Enhanced Write Filter**
  - Overview
  - Enabling Enhanced Write Filter
  - Committing Data and/or Disabling EWF
- **File-Based Write Filter**
  - Configuring File-Based Write Filter
  - Excluding Files from FBWF Protection
  - Managing Temporary Files Cached in the Overlay

Enhanced Write Filter

Overview

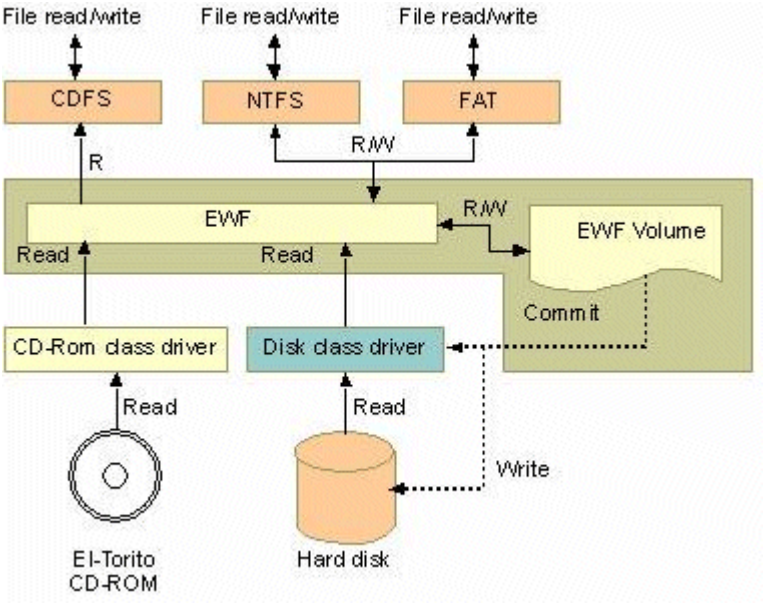
Enhanced Write Filter (EWF) enables you to protect a volume from unauthorized writes by making the main operating system (OS) drive a write-protected volume, effectively making the system a read-only system for most users. This provides much stronger protection against malicious computer attacks (such as trojans, worms, and viruses).

Enhanced Write Filter (EWF) allows Windows 7 users to protect data on their storage drive from permanent changes of any sort, at the lowest level of hardware protection available: the bit level. **EWF** allows the OS to boot from the hard disk, but protects the system by creating a virtual file system called an **overlay**. All writes to an EWF-protected volume (the **hard disk** in the following figure) are only recorded on this virtual overlay (the **EWF Volume** in the following figure), which is stored independently in random access memory (RAM).

Because EWF does not write data directly to the hard disk but instead only records system writes to this virtual RAM overlay, any data that is "written" during system operation will disappear upon the next re-boot. This approach allows the system to operate as if it is writeable when in reality all OS and user-space file systems are stored in a permanent, read-only state.

If required, data written to the overlay can be committed to the protected volume, but this requires additional setup and permissions that can only be granted by the administrator.

The following figure shows an overview of the EWF structure.



For more detailed information about EWF configuration and usage, refer to the following resources:

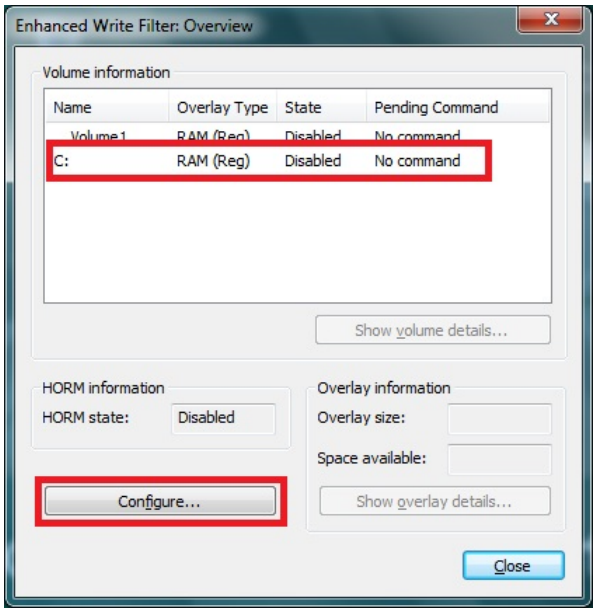
- Visit Microsoft's EWF Volume Configuration help pages.
- See Microsoft's EWF overview on the official Microsoft EWF help pages.
- See Microsoft's detailed description of EWF modes on the EWF help pages.
- See Microsoft's detailed description of the EWF API.
- For EWF commands, refer to the MSDN web site: http://msdn.microsoft.com/en-us/library/ms940853%28v=winembedded.5%29.aspx

Enabling Enhanced Write Filter

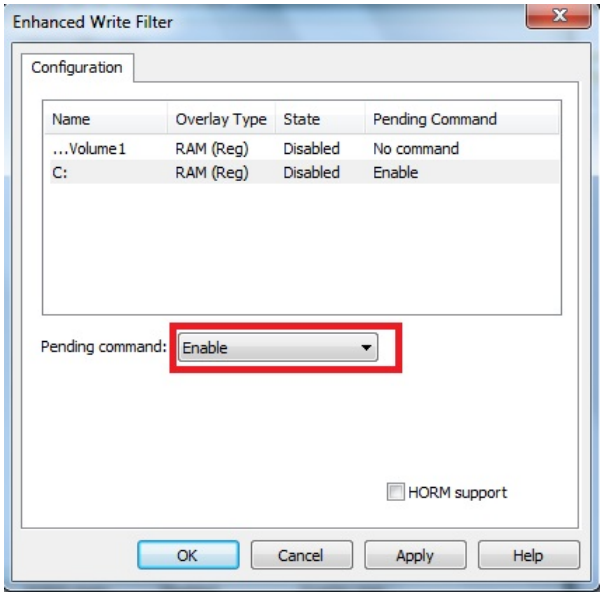
Follow these steps to enable Enhanced Write Filter:

1. To open EWF, double-click the padlock icon in the system tray.
   You may need to show hidden icons in the system tray.

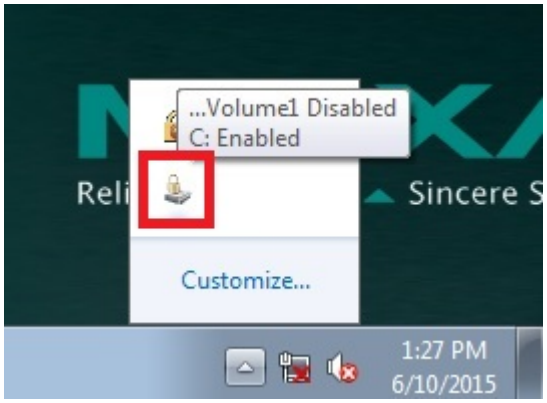
2. In the **Volume Information** area, select the partition you want to enable write-protection on and click **Configure...**.



3. The Configuration dialog box appears. Select **Enable** from the **Pending command** drop-down list and click **OK**.



4. Reboot the system.
5. Log into the system and verify that the padlock icon in the system tray indicates that the drive volume is locked with EWF.

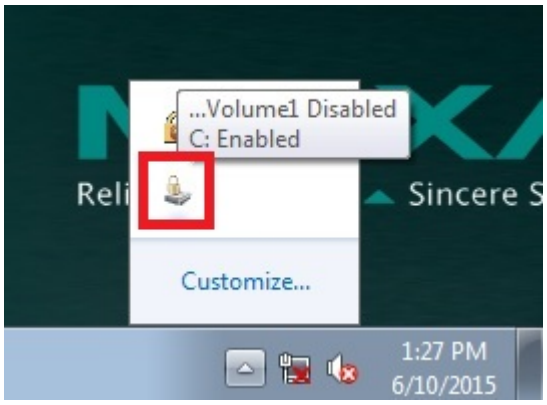


Committing Data and/or Disabling EWF

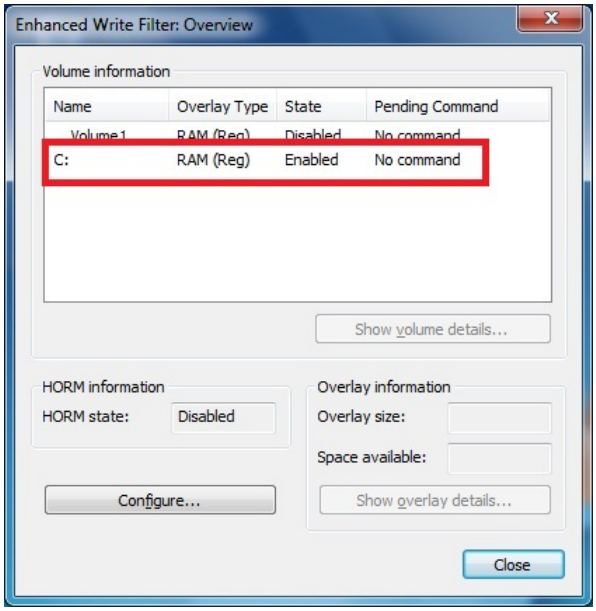
Perform the following steps to write (or commit) data to an EWF-enabled drive.

NOTE You must have administrator privileges to commit data to the drive.

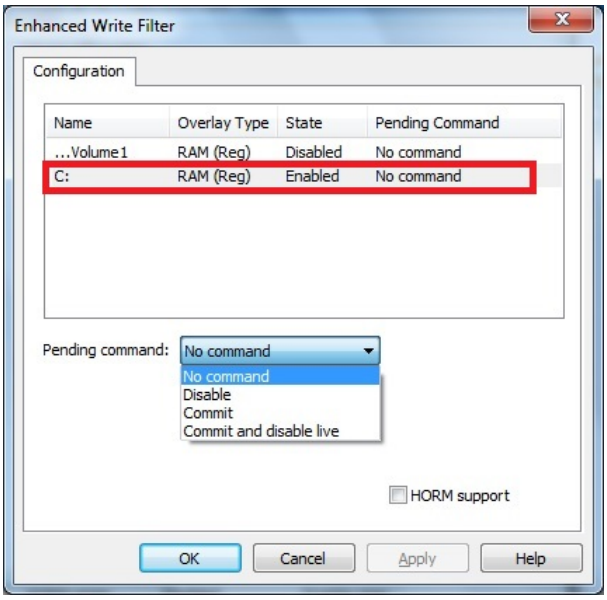
1. Double-click the padlocked drive in the system tray.
   You may need to show hidden icons in the system tray.



2. In the **Enhanced Write Filter: Overview** dialog box, select the drive you want to configure and click **Configure**.



3. In the Enhanced Write Filter Configuration screen, select a drive volume; then, select an option from the **Pending Command** drop-down list:
   - **No Command**
   - **Disable:** Disables EWF on the selected drive. The system automatically reboots if you select this option.
   - **Commit:** Writes all current system changes to the hard drive.
   - **Commit and Disable Live:** Writes all current data and changes to the system, and also turns off EWF on the selected drive (so that all future data and system changes will also be committed to the drive). The system does not automatically reboot if you select this option.



NOTE For detailed information, go to the Microsoft website at http://msdn.microsoft.com/en-us/library/ff794092(v=winembedded.60).aspx.

File-Based Write Filter

This section describes how to use the File-Based Writer Filter (FBWF). Note that when Enhanced Writer Filter is enabled, the File-Based Writer Filter function will not work.

According to Microsoft:

"File-Based Write Filter (FBWF) allows the Windows Embedded platform to maintain the appearance of read and write access on write-sensitive or read-only storage. FBWF makes read and write access transparent to applications.

Writing to storage media may be undesirable or impossible in embedded devices. FBWF redirects all writes targeted for protected volumes to a RAM cache called an overlay. Used in this context, an overlay is similar to a transparency overlay on an overhead projector. Any change made to the overlay affects the picture as seen in the aggregate, but if the overlay is removed, the underlying picture remains unchanged."

FBWF supports an advanced ESF feature, which allows users to specify which directory to write data to. The default directory is c:\temp. The advanced feature allows you can read/write data to disk without committing an action.

Configuring File-Based Write Filter

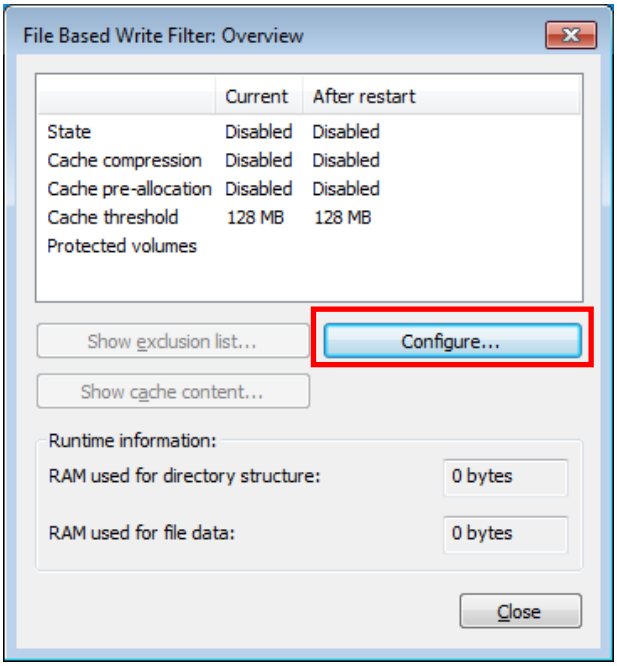
Complete the following steps to enable the File-Based Write Filter (FBWF) feature. Although you can enable FBWF and EWF on the same computer, FBWF does not protect a volume that is already protected by EWF. Similarly, EWF does not protect a volume that is already protected by FBWF.

NOTE Before using FBWF, make sure that you disable EWF.

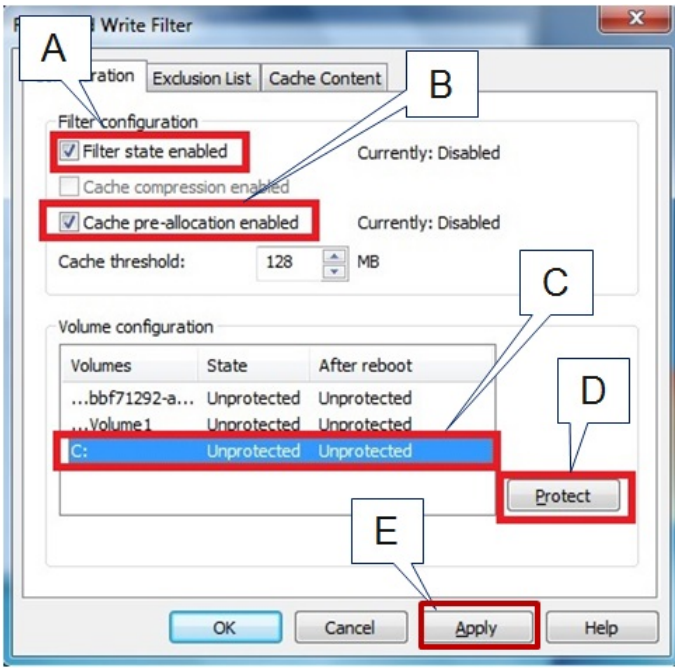
1. Double-click the padlock icon in the system tray.
   You may need to show hidden icons in the system tray.

NOTE When disabled, the EWF and FBWF icons in the system tray look the same. To verify that you have opened the correct writer filter program, check the screen title.

2. In the **File Based Writer Filter: Overview** screen, click **Configure**.

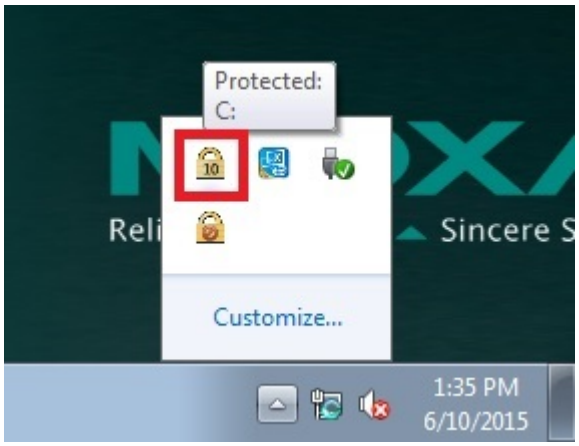


3. To enable FBWF protection on a storage drive, perform the following actions:
   a. Select **Filter state enabled** and **Cache pre-allocation enabled**.
   b. In the **Volume Configuration** area, select the storage drive you want to protect and click **Protect**.
   c. Click **Apply** or **OK**.



NOTE To minimize memory usage on the overlay cache, select **Cache compression enabled**. However, cache compression decreases performance when accessing protected volumes.
Select **Cache pre-allocation enable** to set the memory space available for the overlay cache when the system starts up, instead of adjusting it as needed.
You cannot enable cache pre-allocation and cache compression at the same time.
The **cache threshold** field sets the amount of memory that can be used by the write filter for the overlay cache. The default value and size limits for the overlay cache vary depending on the operating system.

4. Reboot the system.
5. Log into the system and verify that the padlock icon in the system tray displays a number and indicates that FBWF is enabled on a drive. The following figure shows an example.

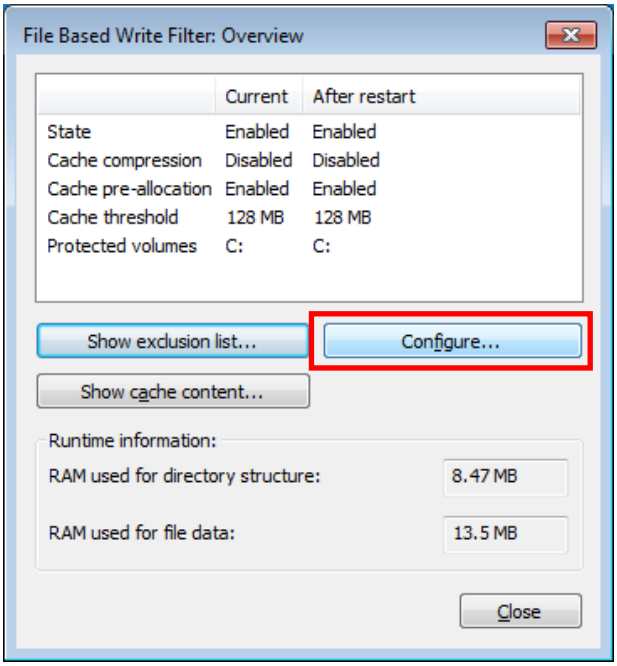


Excluding Files from FBWF Protection

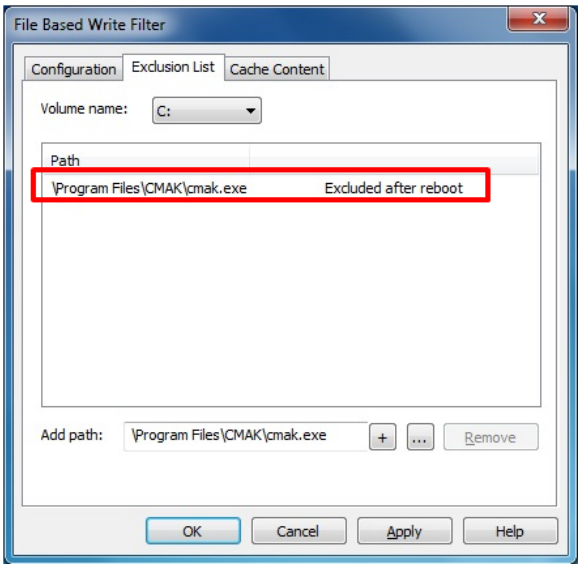
1. Double-click the FBWF icon in the system tray.

   You may need to show hidden icons in the system tray.

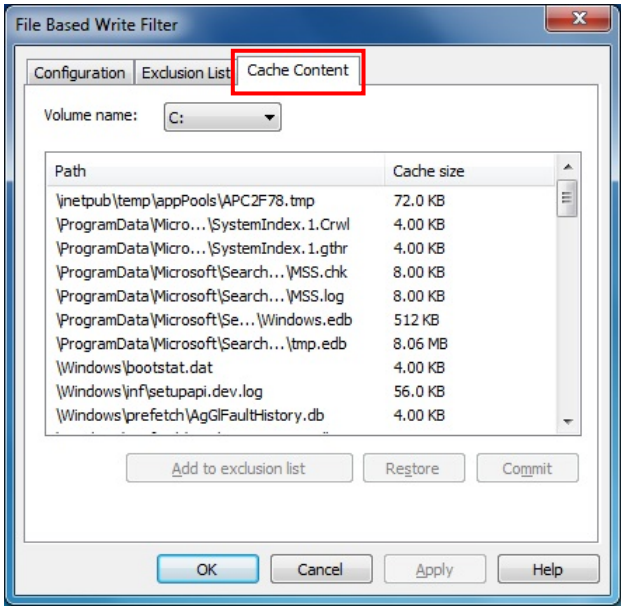
2. In the **File Based Write Filter:** Overview window, click **Configure**.



3. Click the **Exclusion List** tab and configure the following fields:
   - **Volume name** – Select a drive volume from the drop-down list.
   - **Add path** – click the ellipsis (**...**) button to select a directory or file you want to exclude from FBWF protection; then click the **+** button. The system displays the selected directory or file in the **Path** table.



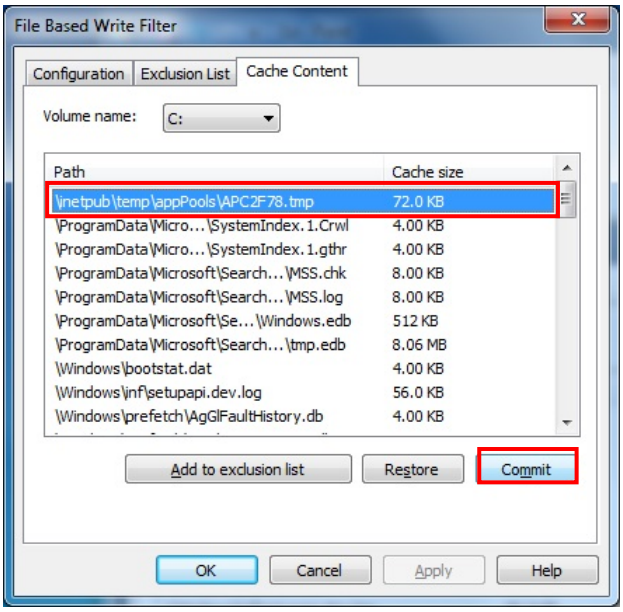
4. Click the **Cache Content** tab and click **Apply** and **OK**



5. Reboot the system to make the changes take effect.

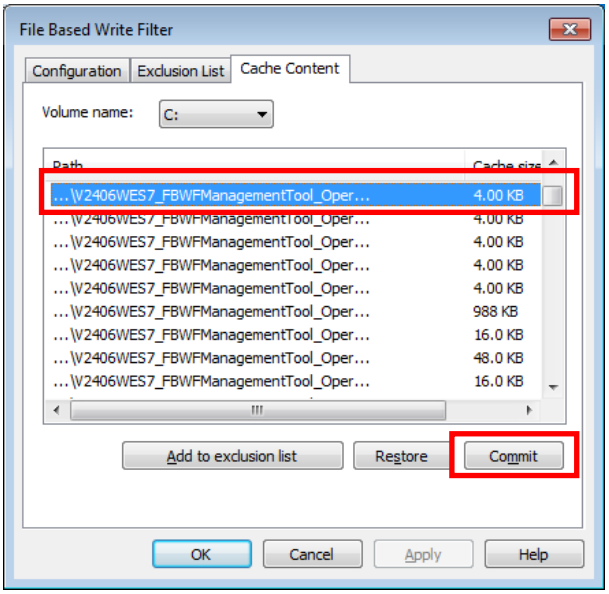
Managing Temporary Files Cached in the Overlay

1. On the **Cached Content** tab, you will see all the files currently cached in the RAM overlay. Three commands are available:
   - **Commit**: Save a file from the cache to permanent storage, delete the file from the overlay, and overwrite the original file.
   - **Restore**: Return the file to its original state, remove the file from the overlay cache and discard the changes that added the file to the cache.
   - **Add to exclusion list**: Adds the file to the exclusion list after the next restart. This will delete the file from the cached overlay and replace the current file in permanent storage with the modified cache file.



2. The most common usage of the Cache Content filter will likely be to permanently write content to the hard drive. To do this, select the file you wish to write to permanent memory and click on the **commit** button. This will delete the file from the cached overlay and replace the current file in permanent storage with the modified cache file.

   Keep in mind that committing a configuration or application file will permanently alter the setup and/or performance of the application or system.



For more details about FBWF configuration and usage, refer to the Microsoft help file that came with your computer, or go to the following websites:

- Microsoft's FBWF Installation and Configuration help pages.
- Microsoft's FBWF overview on the official Microsoft FBWF help pages.
- Microsoft's detailed description of FBWF features on the FBWF help pages.
- Microsoft's detailed description of the FBWF API.

5

Examples

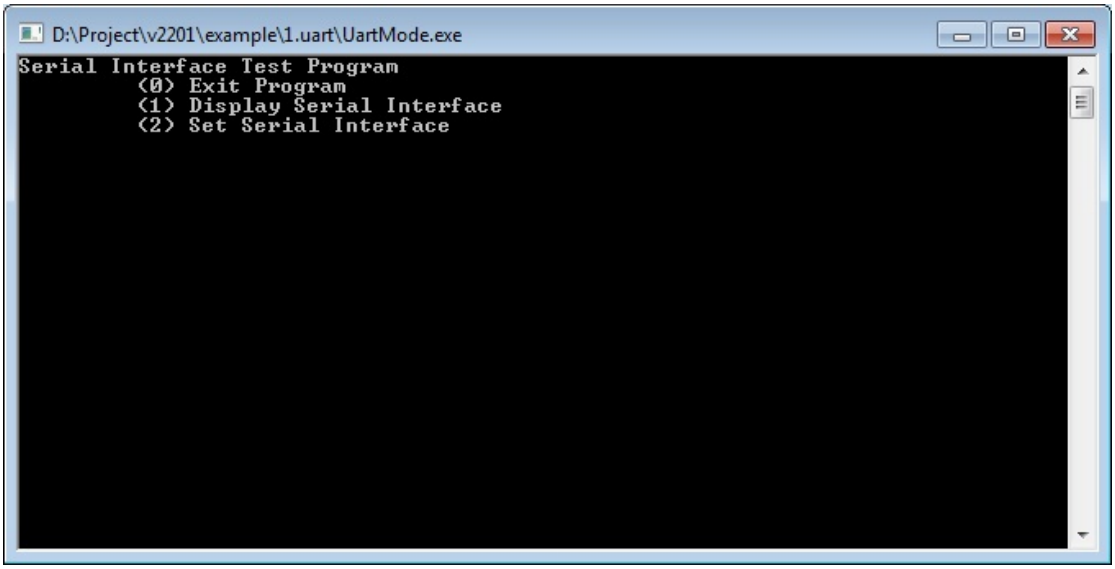
This chapter provides examples to illustrate how to use the V2201 computer for a variety of applications.

The following topics are covered in this chapter:

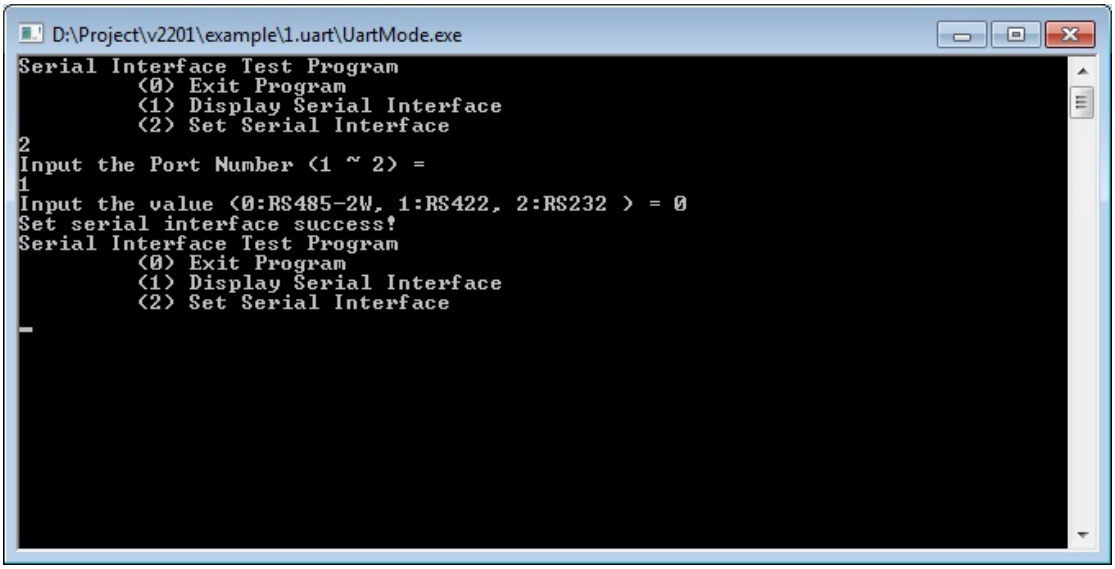
- **Serial Interface**
- **Digital Input/Output**
- **Watchdog**
- **LED**
- **Power Control**
- **Power Reset**

Serial Interface

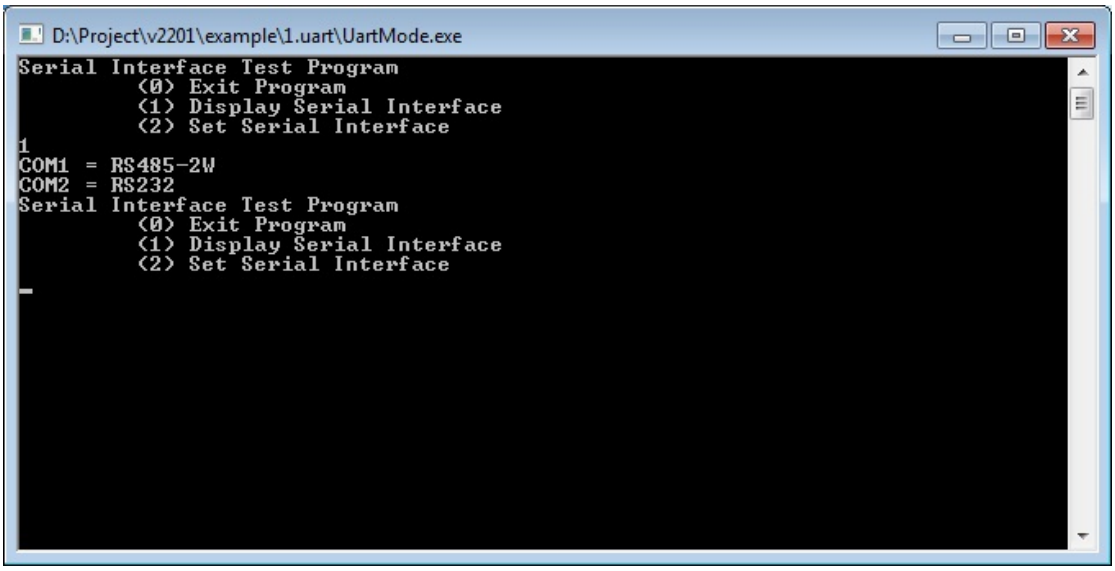
1. Copy the following files from the software CD/DVD to a folder on the V2201.
   - **mxsp.dll:** \examples\V2201-W7E-example\3.lib\mxsp\x64\
   - **sysinfo.dll:** \examples\V2201-W7E-example\3.lib\mxsp\x64\
   - **sysinfo.sys:** \examples\V2201-W7E-example\3.lib\mxsp\x64\
   - **sysinfoX64.sys:** \examples\V2201-W7E-example\3.lib\mxsp\x64\
   - **mxGeneralIo.dll:** \examples\V2201-W7E-example\3.lib\MxGeneralIo\x64\
   - **UartMode.exe:** \examples\V2201-W7E-example\Release\x64\
2. Execute **UartMode.exe**.



3. Type **2** to set the serial interface, and then follow the on-screen instructions.

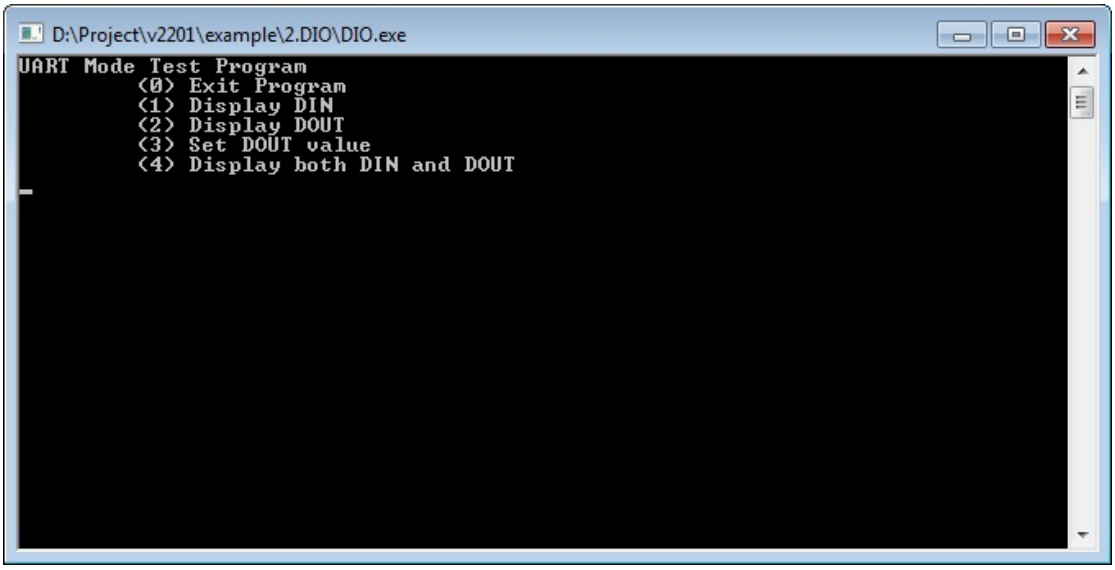


4. Type **1** to display the current serial interface settings.

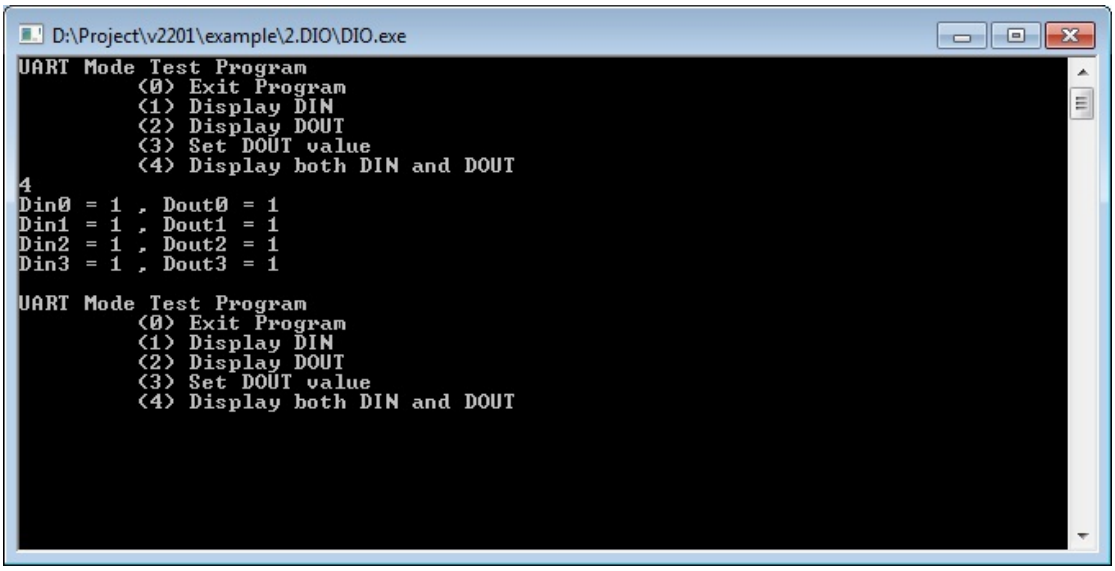


Digital Input/Output

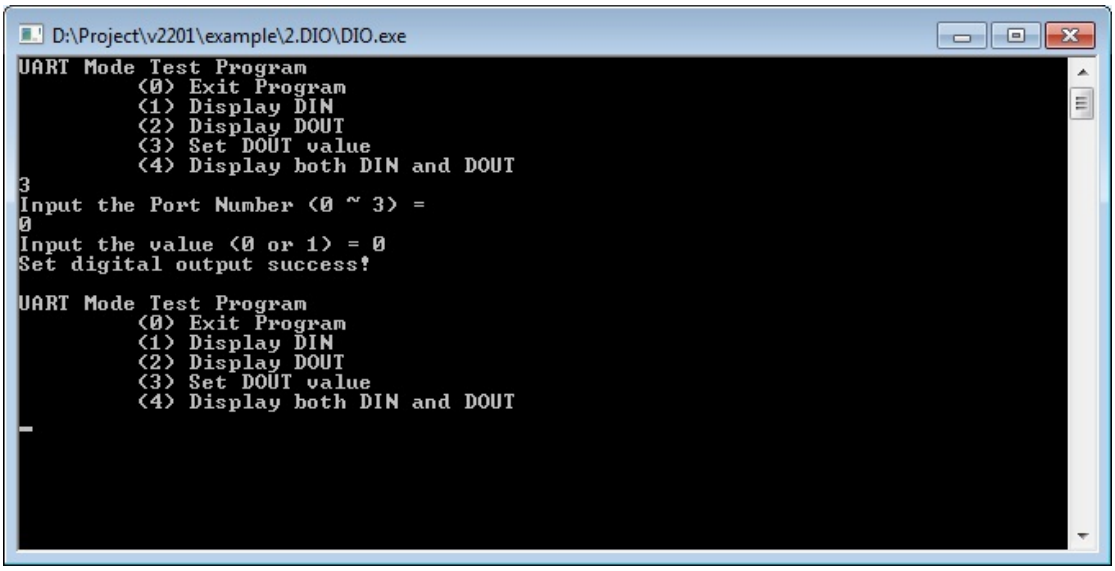
1. Copy the following files from the software CD/DVD to a folder on the V2201.
   - **mxdgio.dll:** \examples\V2201-W7E-example\3.lib\mxdgio\x64\
   - **mxGeneralIo.dll:** \examples\V2201-W7E-example\3.lib\MxGeneralIo\x64\
   - **DIO.exe:** \examples\V2201-W7E-example\Release\x64\
2. Execute **DIO.exe.**



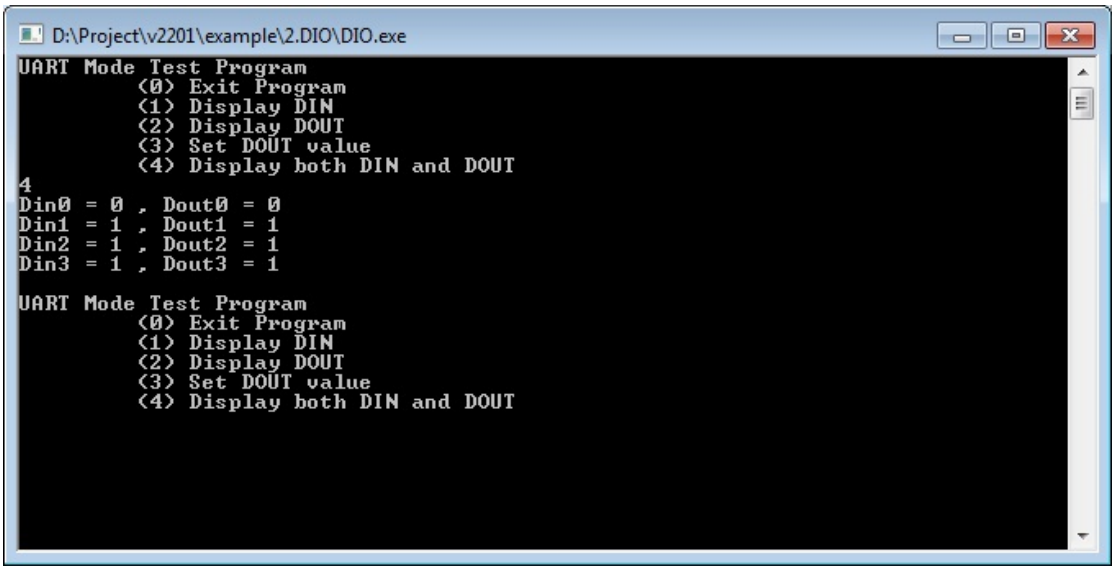
3. Type **4** to display the current DI and DO values.


D:\Project\v2201\example\2.DIO\DIO.exe
UART Mode Test Program
(0) Exit Program
(1) Display DIN
(2) Display DOUT
(3) Set DOUT value
(4) Display both DIN and DOUT
4
Din0 = 1 , Dout0 = 1
Din1 = 1 , Dout1 = 1
Din2 = 1 , Dout2 = 1
Din3 = 1 , Dout3 = 1
UART Mode Test Program
(0) Exit Program
(1) Display DIN
(2) Display DOUT
(3) Set DOUT value
(4) Display both DIN and DOUT

4. Type **3** to set the DOUT port number, and then follow the on-screen instructions.

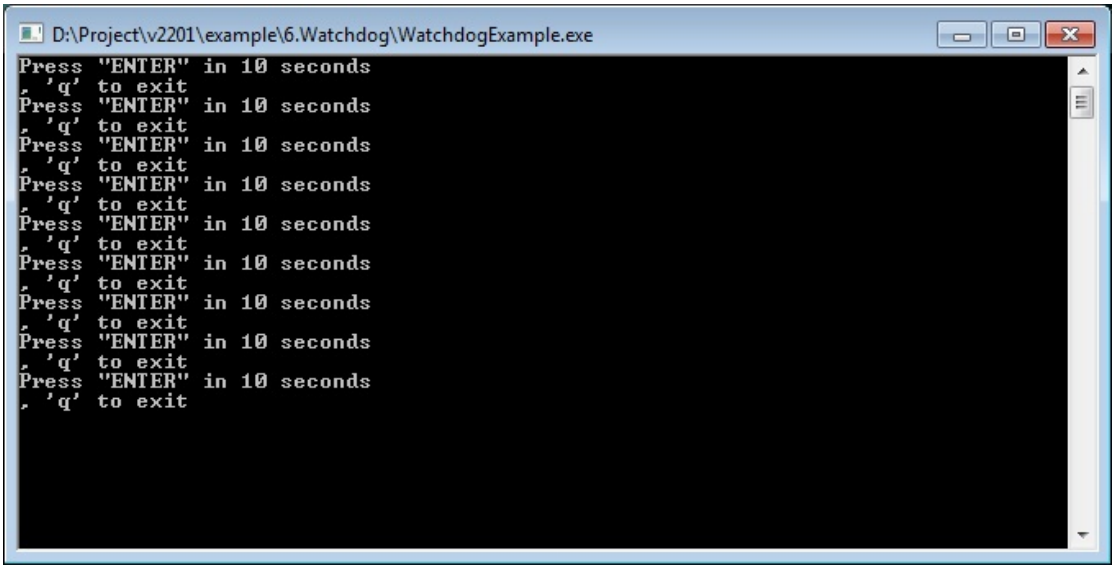


5. Type **4** to check if the port value was set correctly.


D:\Project\v2201\example\2.DIO\DIO.exe
UART Mode Test Program
(0) Exit Program
(1) Display DIN
(2) Display DOUT
(3) Set DOUT value
(4) Display both DIN and DOUT
4
Din0 = 0 , Dout0 = 0
Din1 = 1 , Dout1 = 1
Din2 = 1 , Dout2 = 1
Din3 = 1 , Dout3 = 1
UART Mode Test Program
(0) Exit Program
(1) Display DIN
(2) Display DOUT
(3) Set DOUT value
(4) Display both DIN and DOUT

Watchdog

1. Copy the following files from the software CD/DVD to a folder on the V2201.
   - **mxdwg.dll:** \examples\V2201-W7E-example\3.lib\mxdwg\x64\
   - **mxGeneralIo.dll:** \examples\V2201-W7E-example\3.lib\MxGeneralIo\x64\
   - **Watchdog.exe:** \examples\V2201-W7E-example\Release\x64\
2. To prevent the system from rebooting, press [Enter] at least once every 10 seconds; otherwise, the system will reboot automatically.

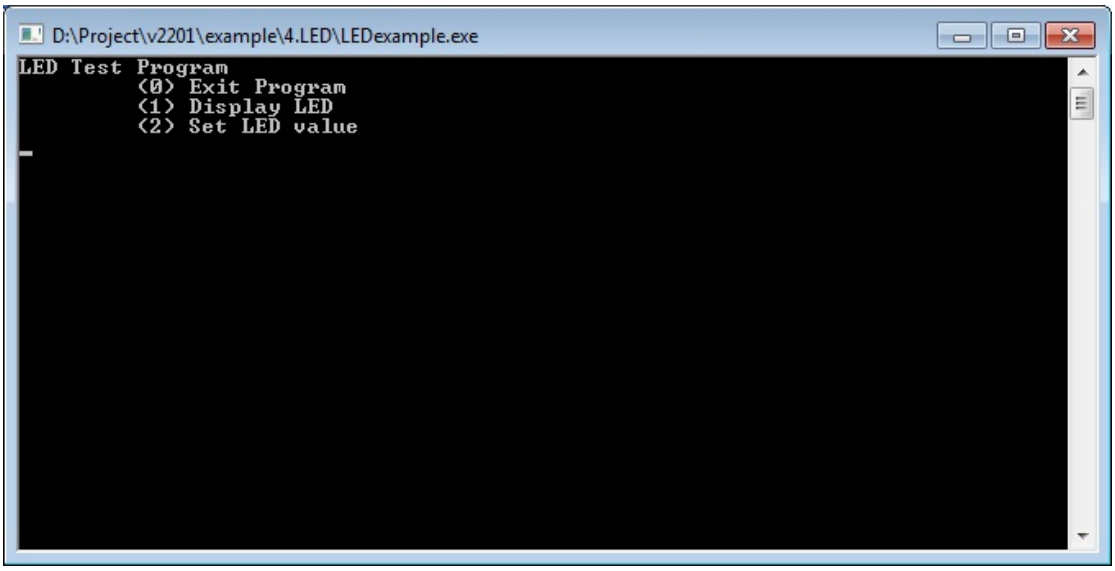

D:\Project\v2201\example\6.Watchdog\WatchdogExample.exe
Press "ENTER" in 10 seconds
, 'q' to exit
Press "ENTER" in 10 seconds
, 'q' to exit
Press "ENTER" in 10 seconds
, 'q' to exit
Press "ENTER" in 10 seconds
, 'q' to exit
Press "ENTER" in 10 seconds
, 'q' to exit
Press "ENTER" in 10 seconds
, 'q' to exit
Press "ENTER" in 10 seconds
, 'q' to exit
Press "ENTER" in 10 seconds
, 'q' to exit
Press "ENTER" in 10 seconds
, 'q' to exit

3. To stop the watchdog, press **q** to exit the program

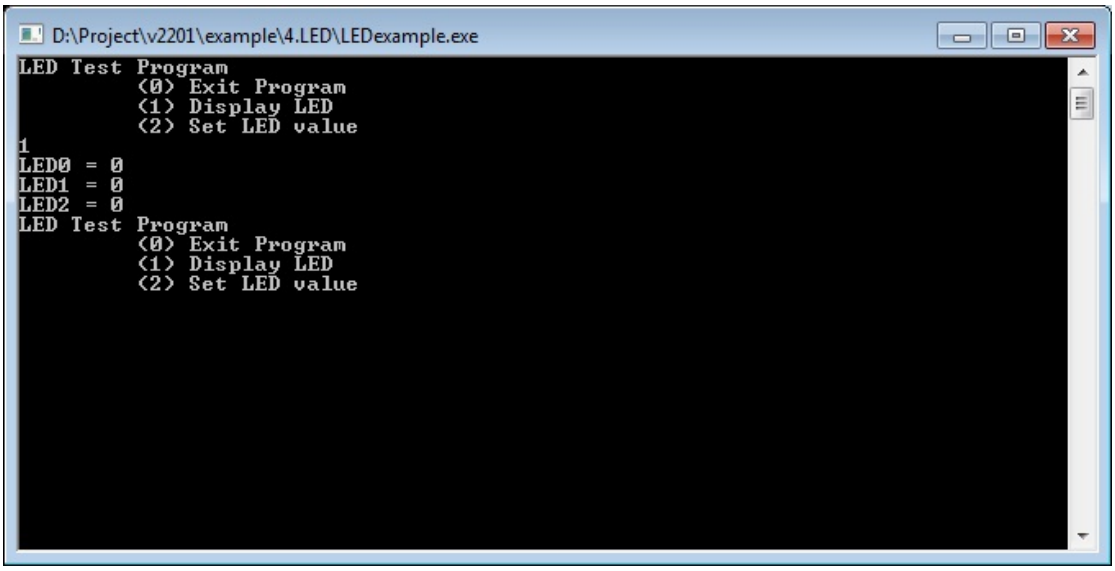
LED

In this section we illustrate how to use the test utility to display and set LED values.

1. Copy the following files from the product software DVD.
   - **mxgpio.dll:** \examples\V2201-W7E-example\3.lib\mxgpio\x64\
   - **mxGeneralIo.dll:** \examples\V2201-W7E-example\3.lib\MxGeneralIo\x64\
   - **LED.exe:** \examples\V2201-W7E-example\Release\x64\
2. Execute **LED.exe**.



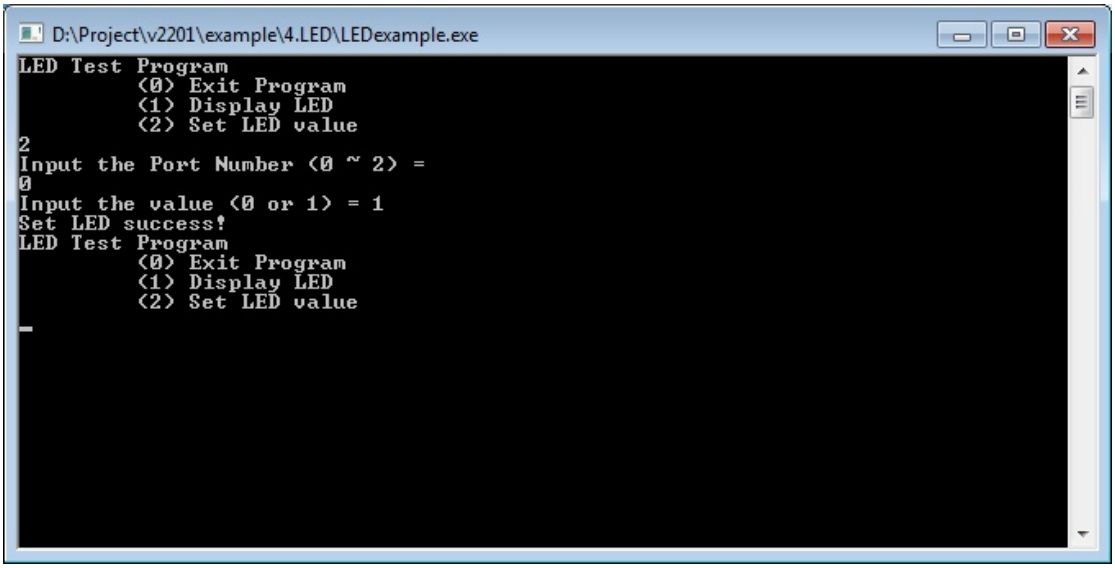
3. Type **1** to display the current LED value.



4. Type **2** and follow the on-screen instruction to set the LED value.

   When you set the LED value to 0, the LEDs turn off.

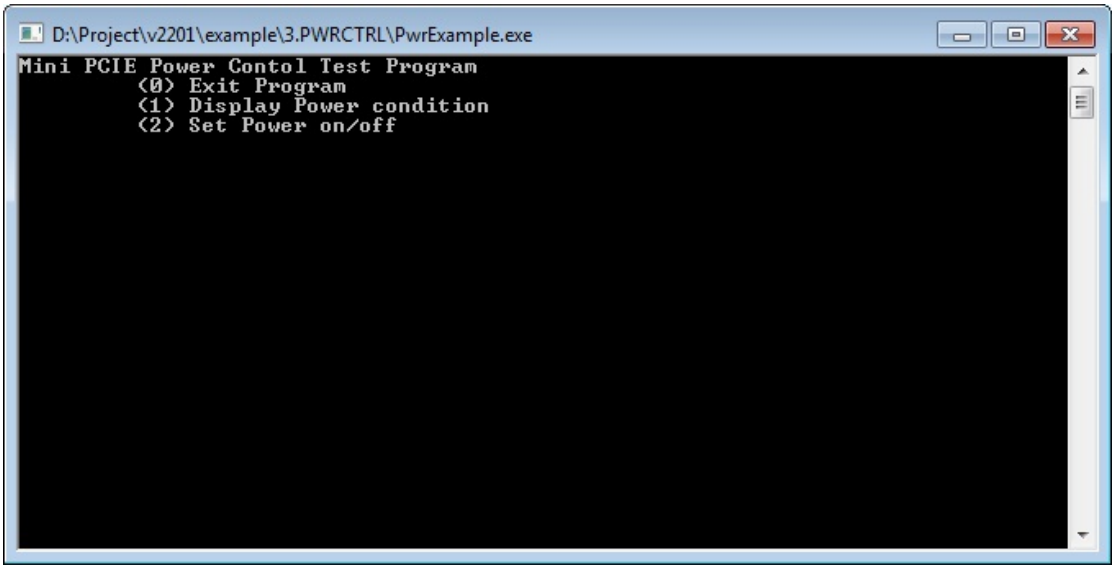
   When you set the LED value to 1, the LEDs turn on.



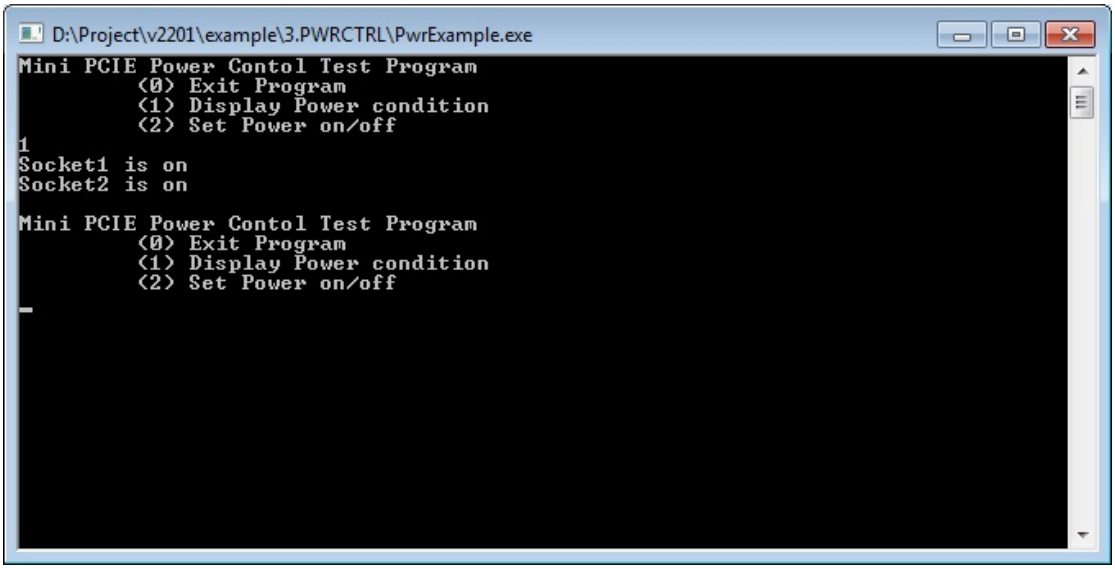
Power Control

In this section, we illustrate how to use the test utility to control power through the mini-PCIE interface.

1. Copy the following files from the product software DVD.
   - **mxgpio.dll:** \examples\V2201-W7E-example\3.lib\mxgpio\x64\
   - **mxGeneralIo.dll:** \examples\V2201-W7E-example\3.lib\MxGeneralIo\x64\
   - **PwrExample.exe:** \examples\V2201-W7E-example\Release\x64\
2. Execute **PwrExample.exe**.



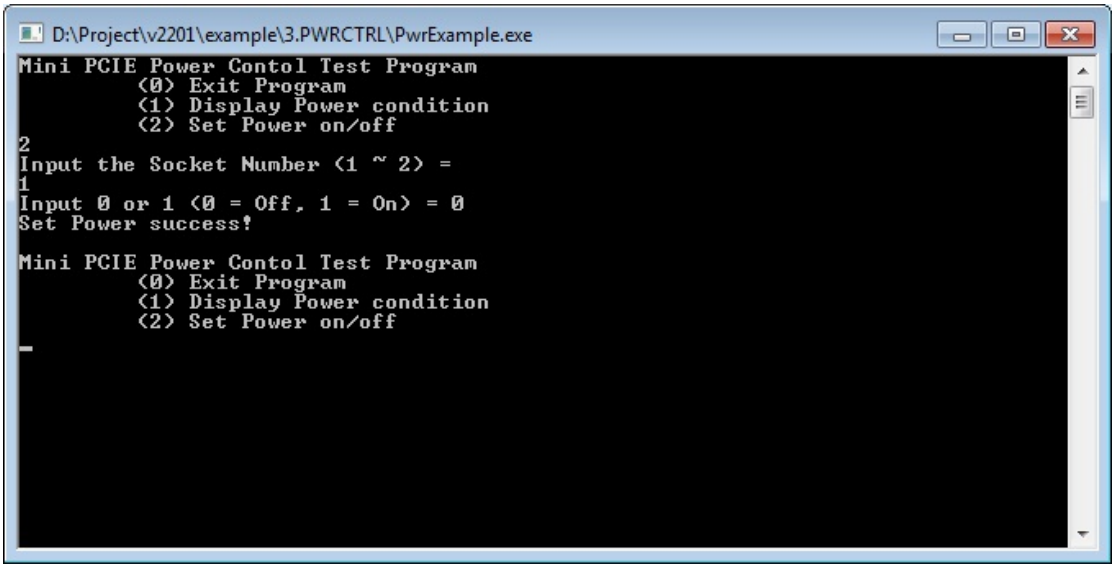
3. Type **1** to display the current power status.



4. Type **2** and follow the on-screen instructions to set the power value.

   When you set the power value to 0, the power turns off.

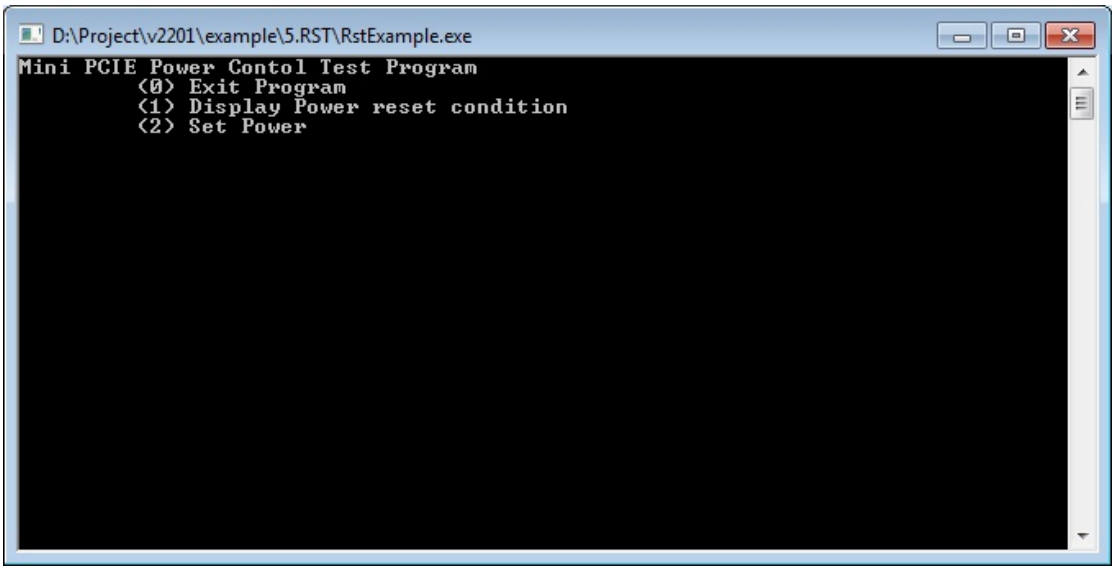
   When you set the power value to 1, the power turns on.


D:\Project\v2201\example\3.PWRCTRL\PwrExample.exe
Mini PCIE Power Contol Test Program
(0) Exit Program
(1) Display Power condition
(2) Set Power on/off
2
Input the Socket Number (1 ~ 2) =
1
Input 0 or 1 (0 = Off, 1 = On) = 0
Set Power success!
Mini PCIE Power Contol Test Program
(0) Exit Program
(1) Display Power condition
(2) Set Power on/off

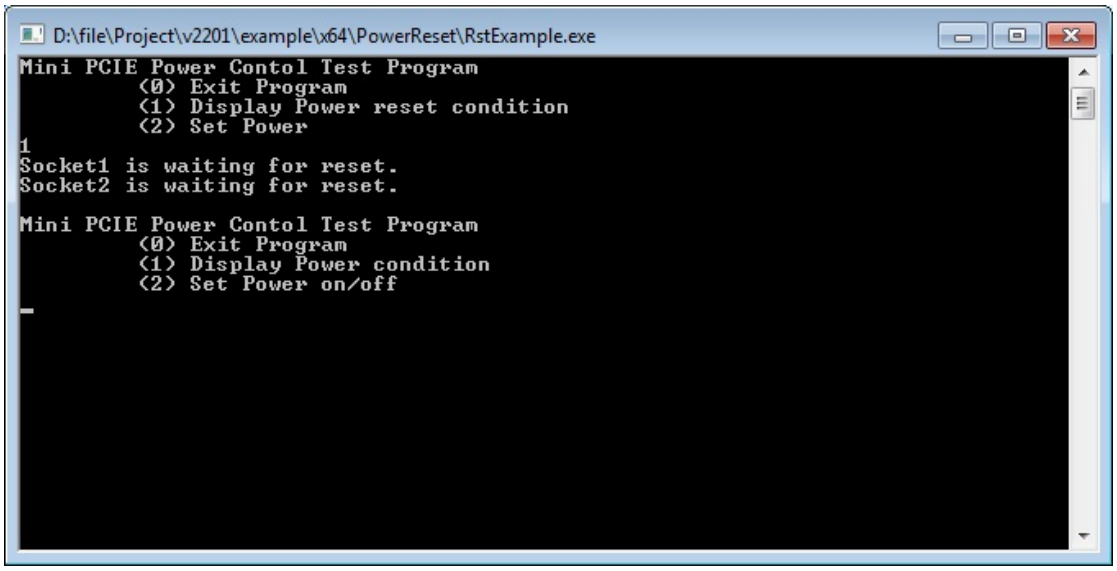
Power Reset

In this section, we illustrate how to use the test utility to reset the power through the mini-PCIE interface.

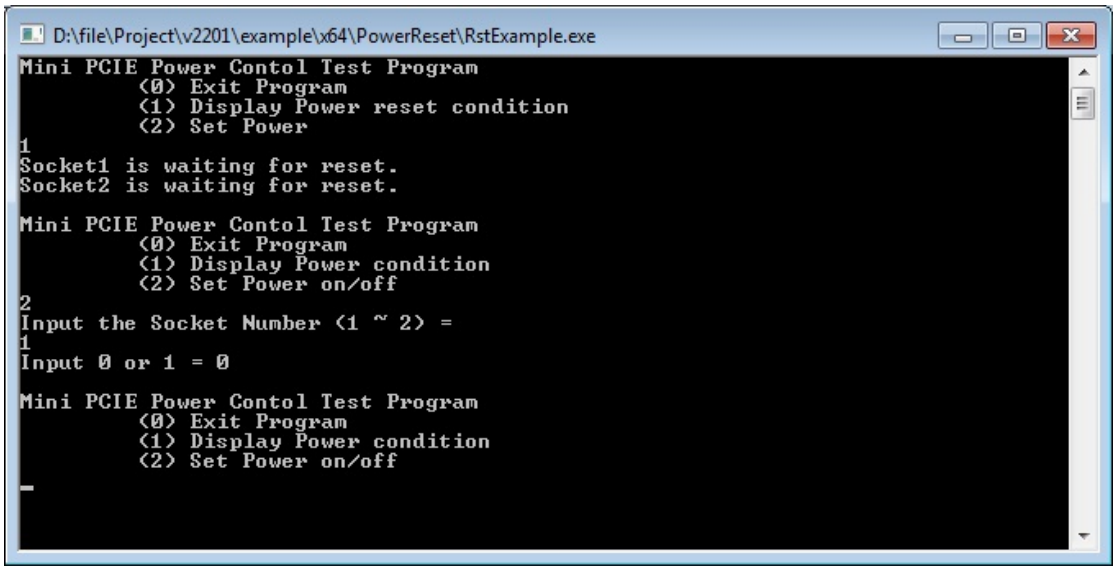
1. Copy the following files from the product software DVD.
   - **mxgpio.dll:** \examples\V2201-W7E-example\3.lib\mxgpio\x64\
   - **mxGeneralIo.dll:** \examples\V2201-W7E-example\3.lib\MxGeneralIo\x64\
   - **RstExample.exe:** \examples\V2201-W7E-example\Release\x64\
2. Execute **RstExample.exe**.



3. Type **1** to display the current power reset status



4. Type **2** and follow the on-screen instructions to set the reset pin.


D:\file\Project\v2201\example\x64\PowerReset\RstExample.exe
Mini PCIE Power Contol Test Program
(0) Exit Program
(1) Display Power reset condition
(2) Set Power
1
Socket1 is waiting for reset.
Socket2 is waiting for reset.
Mini PCIE Power Contol Test Program
(0) Exit Program
(1) Display Power condition
(2) Set Power on/off
2
Input the Socket Number (1 ~ 2) =
1
Input 0 or 1 = 0
Mini PCIE Power Contol Test Program
(0) Exit Program
(1) Display Power condition
(2) Set Power on/off

6

Module Card

In this chapter we discuss installation and usage of the software utility.

The following topics are covered in this chapter:

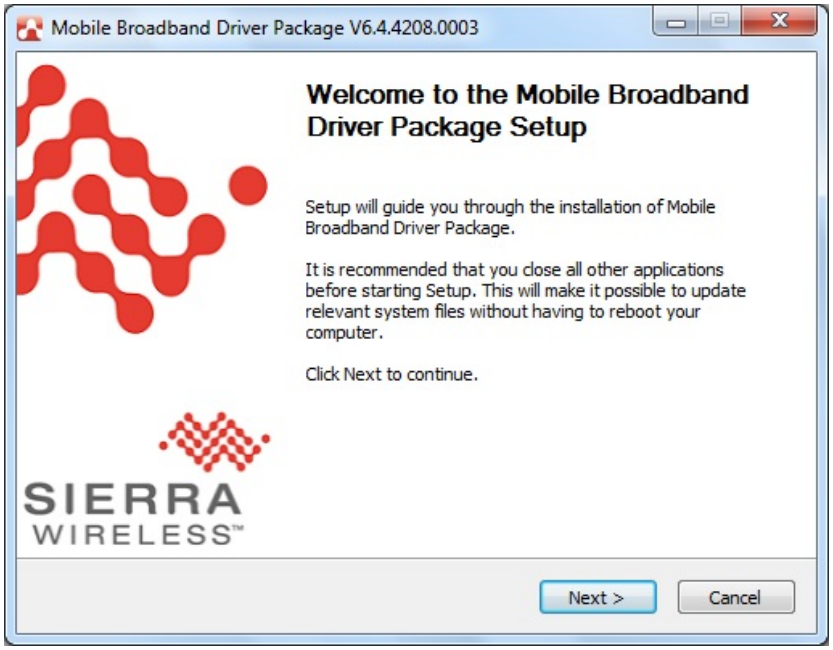
- **Overview**
- **Installing the Cellular Module Driver for the MC-9090, MC-7304, and MC-7354**
- **Installing the Cellular Module Dial Utility**
- **Cellular Module Configuration**
- **Installing the WiFi Module Driver for the WPEA-252NI**
- **WiFi Module Configuration**
- **Choosing the Gateway when WiFi and Cellular are Connected at the Same Time**

Overview

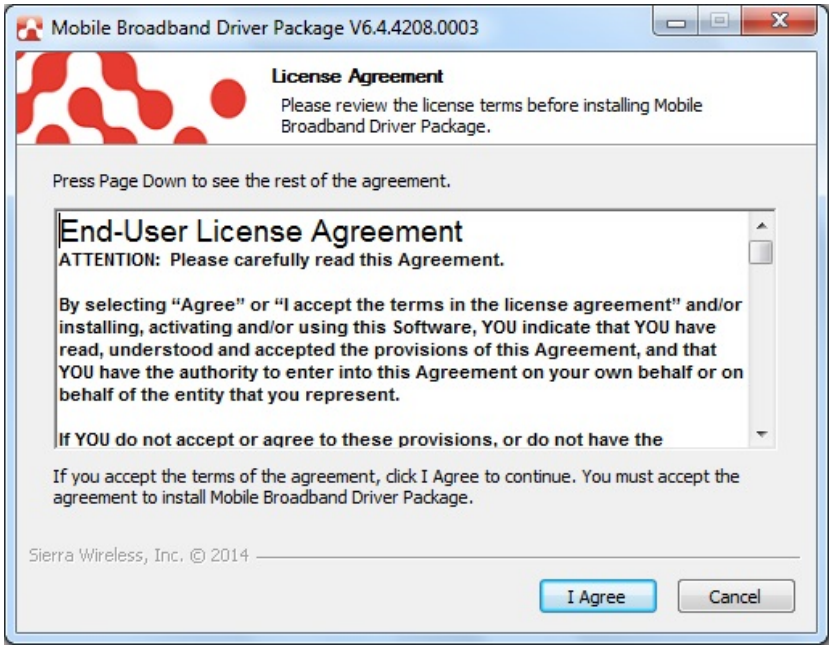
Moxa provides drivers and utilities for the MC-9090, MC-7304, and MC-7354 cellular modules, and WPEA-252NI Wi-Fi modules.

Installing the Cellular Module Driver for the MC-9090, MC-7304, and MC-7354

1. Run **Build4208.exe** to begin installation and then click **Next**.


Mobile Broadband Driver Package V6.4.4208.0003
Welcome to the Mobile Broadband Driver Package Setup
Setup will guide you through the installation of Mobile Broadband Driver Package.
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.
Click Next to continue.
SIERRA WIRELESS
Next >
Cancel

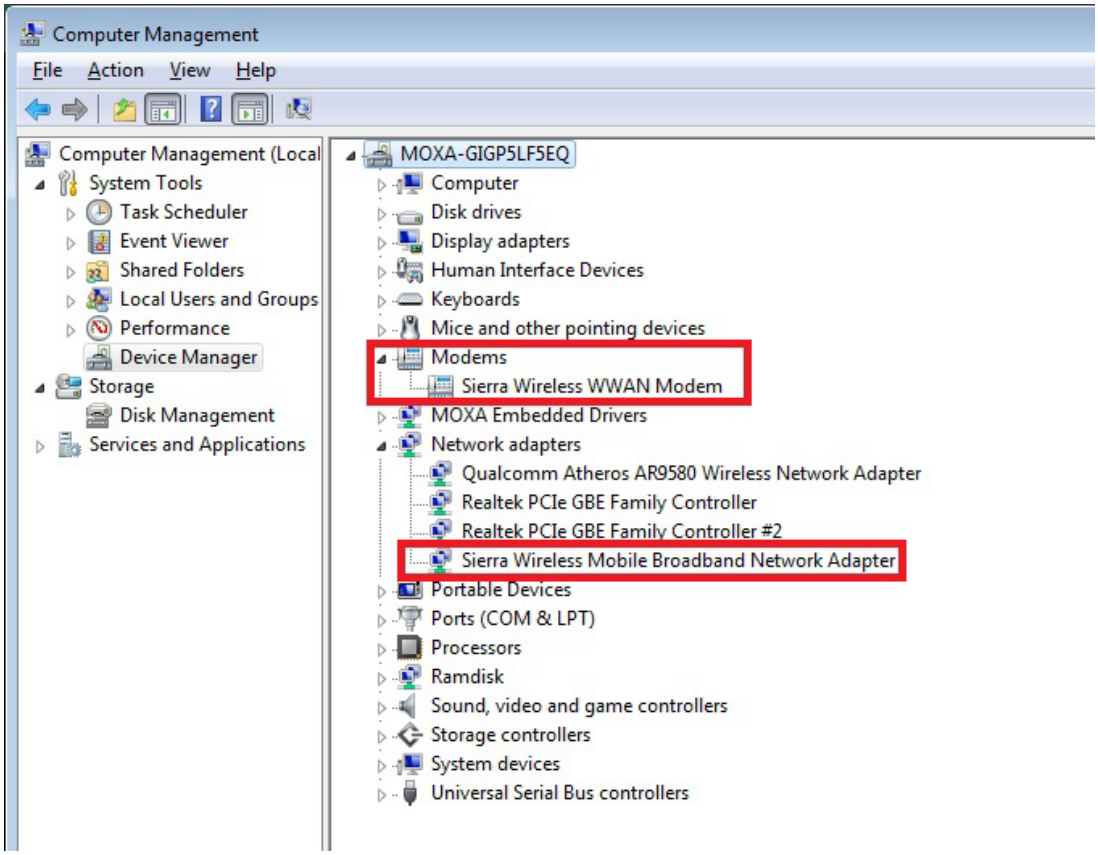
2. Click **I Agree** to accept the license.


Mobile Broadband Driver Package V6.4.4208.0003
License Agreement
Please review the license terms before installing Mobile Broadband Driver Package.
Press Page Down to see the rest of the agreement.
End-User License Agreement
ATTENTION: Please carefully read this Agreement.
By selecting "Agree" or "I accept the terms in the license agreement" and/or installing, activating and/or using this Software, YOU indicate that YOU have read, understood and accepted the provisions of this Agreement, and that YOU have the authority to enter into this Agreement on your own behalf or on behalf of the entity that you represent.
If YOU do not accept or agree to these provisions, or do not have the
If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install Mobile Broadband Driver Package.
Sierra Wireless, Inc. © 2014
I Agree
Cancel

3. Click **Finish** to complete installation.

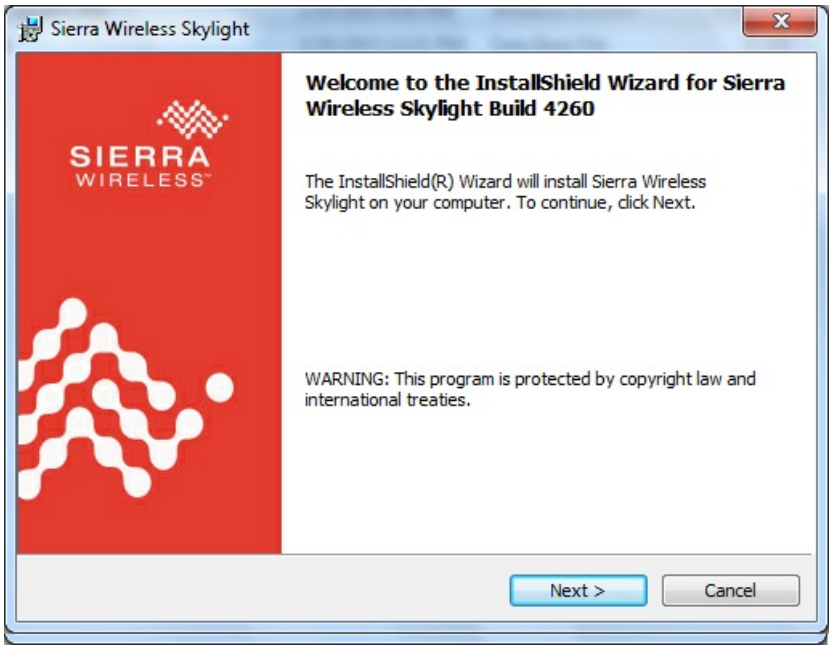
Mobile Broadband Driver Package V6.4.4208.0003
Completing the Mobile Broadband Driver Package Setup
Mobile Broadband Driver Package has been installed on your computer.
Click Finish to close Setup.
SIERRA WIRELESS
< Back
Finish
Cancel

4. The system should locate the new hardware and install the driver automatically. Check **Windows Device Manager** to verify.

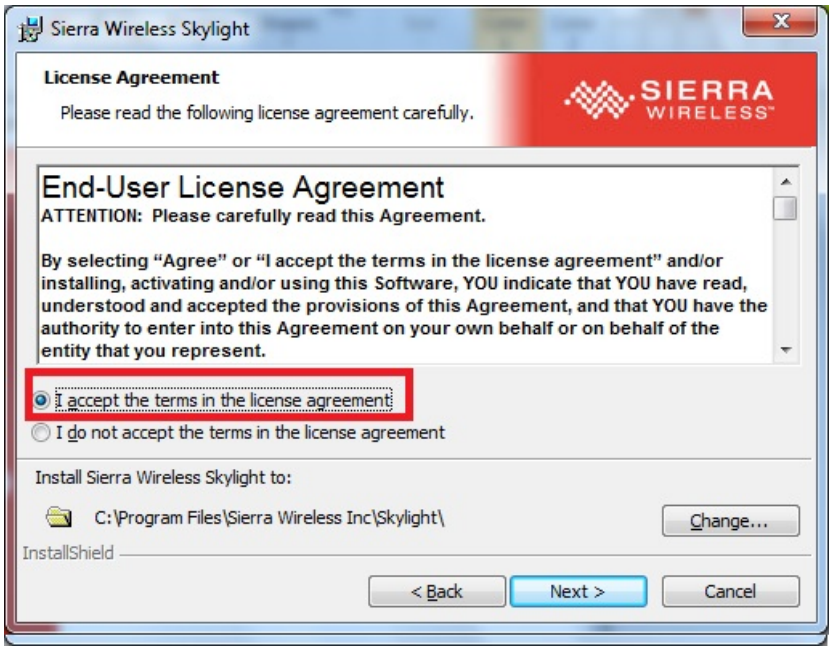


Installing the Cellular Module Dial Utility

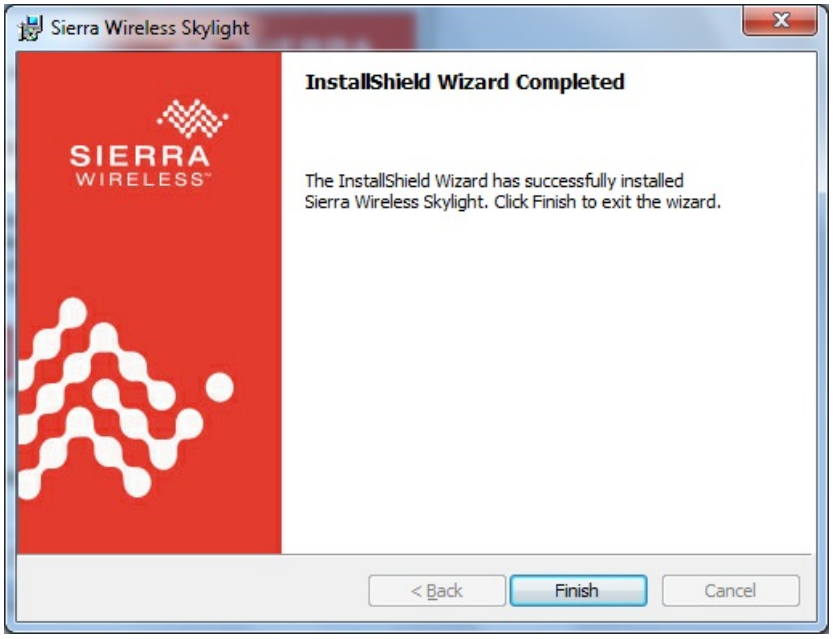
1. Run **\driver\x64\7.Modules\MC-9090\Build4260\Skylight64_Generic.msi** to begin installation and then click **Next**.


Sierra Wireless Skylight
SIERRA WIRELESS
Welcome to the InstallShield Wizard for Sierra Wireless Skylight Build 4260
The InstallShield(R) Wizard will install Sierra Wireless Skylight on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
Next >
Cancel

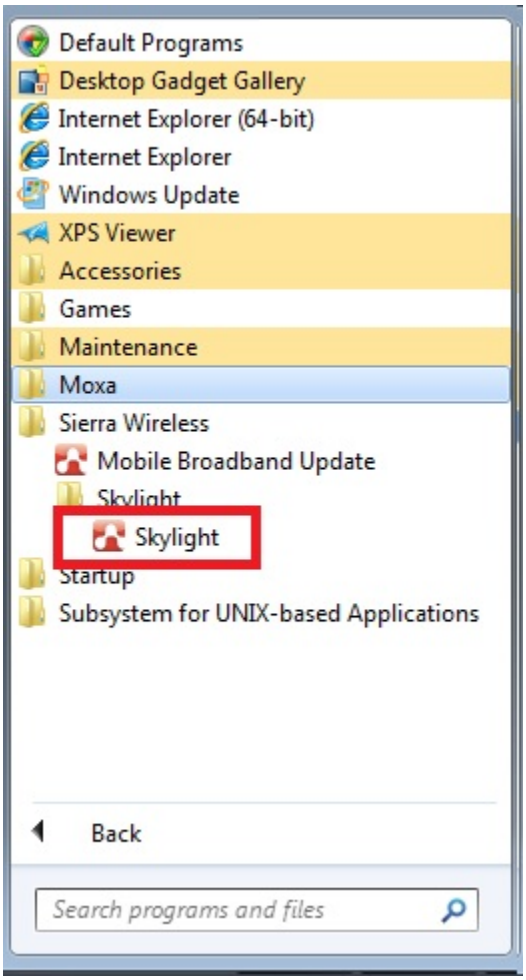
2. Check **I accept the terms in the license agreement** and then click **Next**.


Sierra Wireless Skylight
License Agreement
Please read the following license agreement carefully.
SIERRA WIRELESS
End-User License Agreement
ATTENTION: Please carefully read this Agreement.
By selecting "Agree" or "I accept the terms in the license agreement" and/or installing, activating and/or using this Software, YOU indicate that YOU have read, understood and accepted the provisions of this Agreement, and that YOU have the authority to enter into this Agreement on your own behalf or on behalf of the entity that you represent.
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Install Sierra Wireless Skylight to:
C:\Program Files\Sierra Wireless Inc\Skylight\
Change...
InstallShield
< Back
Next >
Cancel

3. Click **Finish** to complete the installation.



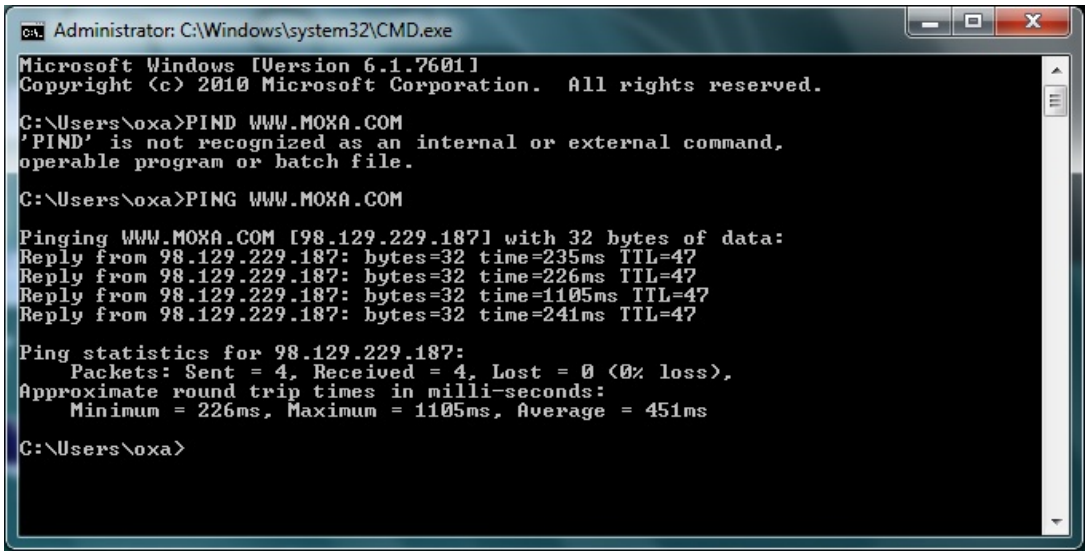
4. The system should locate the new hardware and install the driver automatically. Check **Skylight** under **Sierra Wireless** to double check.



Cellular Module Configuration

1. After installing the cellular module driver and utility, if you want to establish a cellular connection, start **Skylight** and click **Connect**.

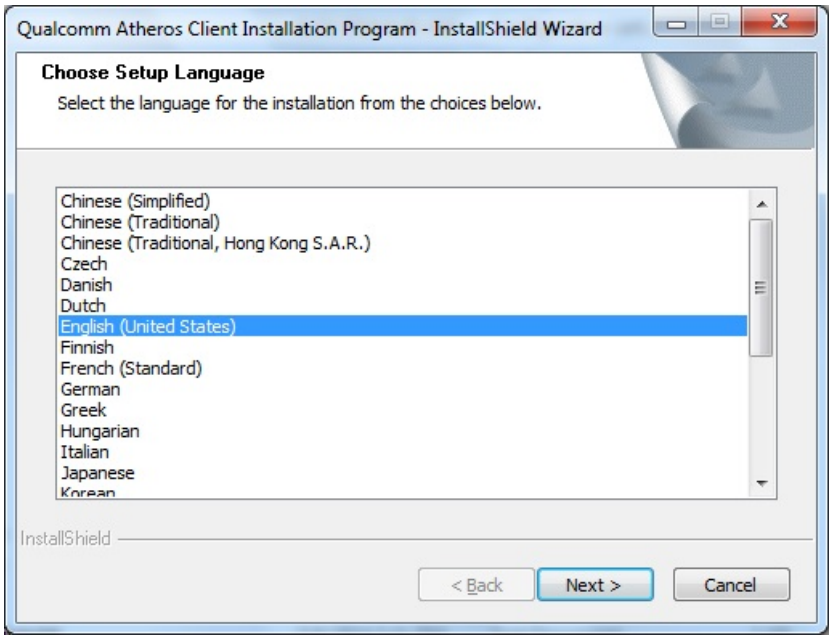
2. You can verify the cellular connection by pinging the interface once the connection is established.


Administrator: C:\Windows\system32\CMD.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2010 Microsoft Corporation. All rights reserved.
C:\Users\oxa>PIND WWW.MOXA.COM
'PIND' is not recognized as an internal or external command,
operable program or batch file.
C:\Users\oxa>PING WWW.MOXA.COM
Pinging WWW.MOXA.COM [98.129.229.187] with 32 bytes of data:
Reply from 98.129.229.187: bytes=32 time=235ms TTL=47
Reply from 98.129.229.187: bytes=32 time=226ms TTL=47
Reply from 98.129.229.187: bytes=32 time=1105ms TTL=47
Reply from 98.129.229.187: bytes=32 time=241ms TTL=47
Ping statistics for 98.129.229.187:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 226ms, Maximum = 1105ms, Average = 451ms
C:\Users\oxa>

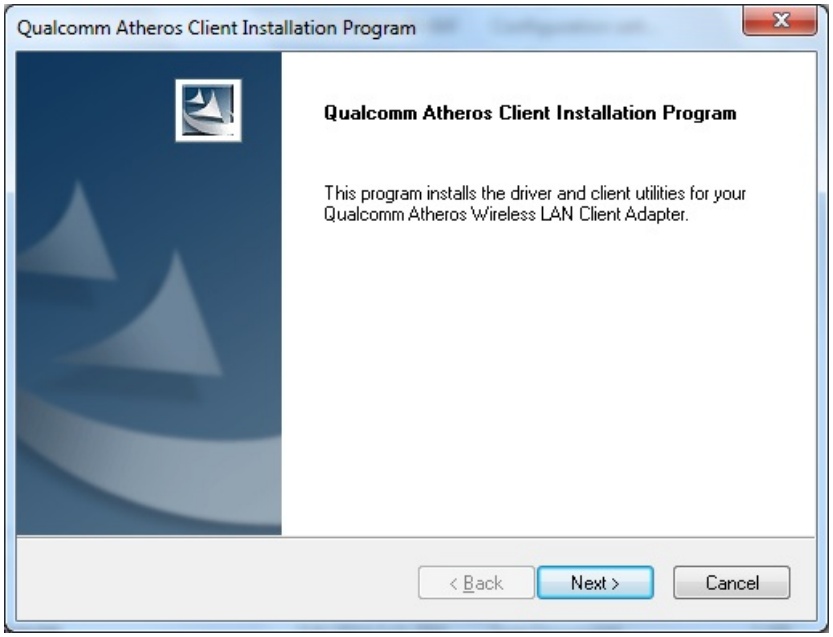
3. If you want to interrupt the cellular connection, click **Disconnect**.

Installing the WiFi Module Driver for the WPEA-252NI

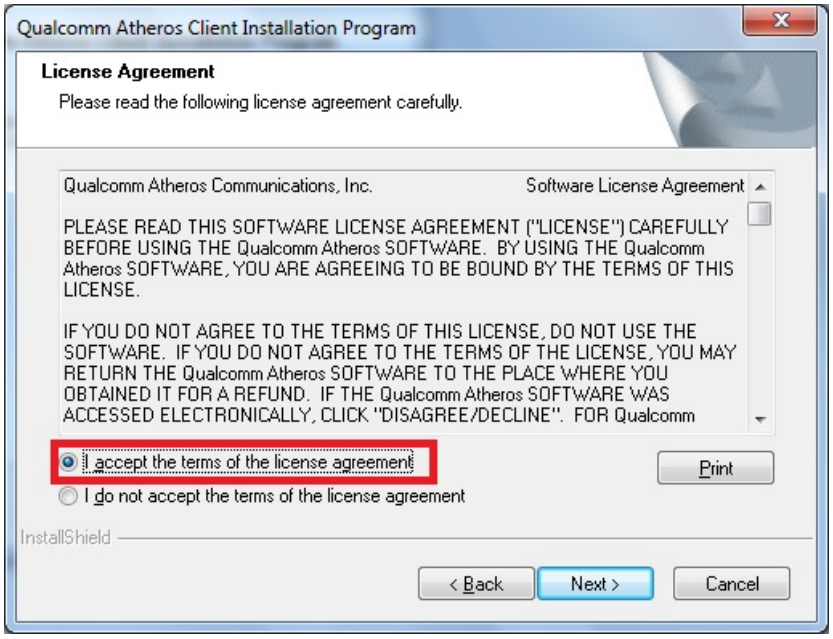
1. Run **\driver\x64\7.Modules\WPEA-252NI\Install_CD\setup.exe** to begin the installation.
2. Select which language you would like to use and then click **Next**.



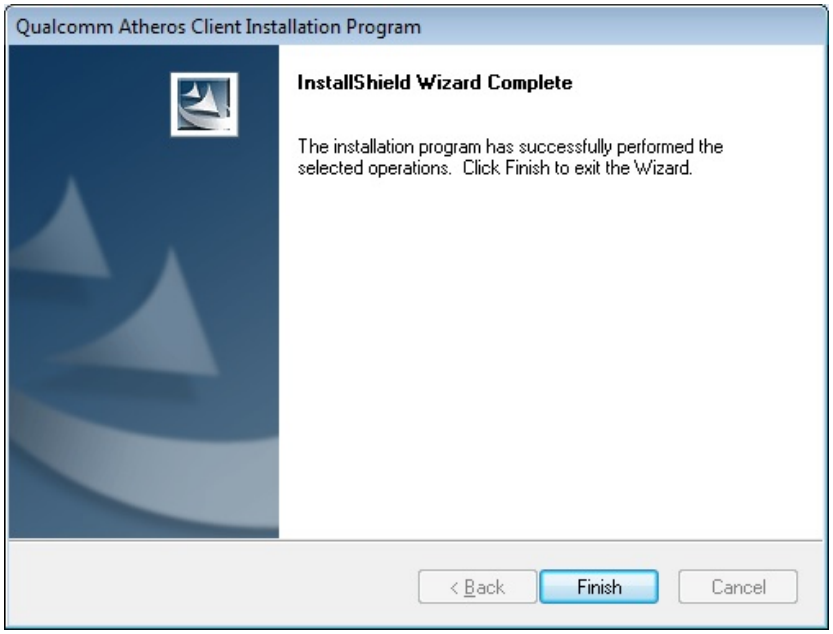
3. Click **Next**.


Qualcomm Atheros Client Installation Program
Qualcomm Atheros Client Installation Program
This program installs the driver and client utilities for your Qualcomm Atheros Wireless LAN Client Adapter.
< Back
Next >
Cancel

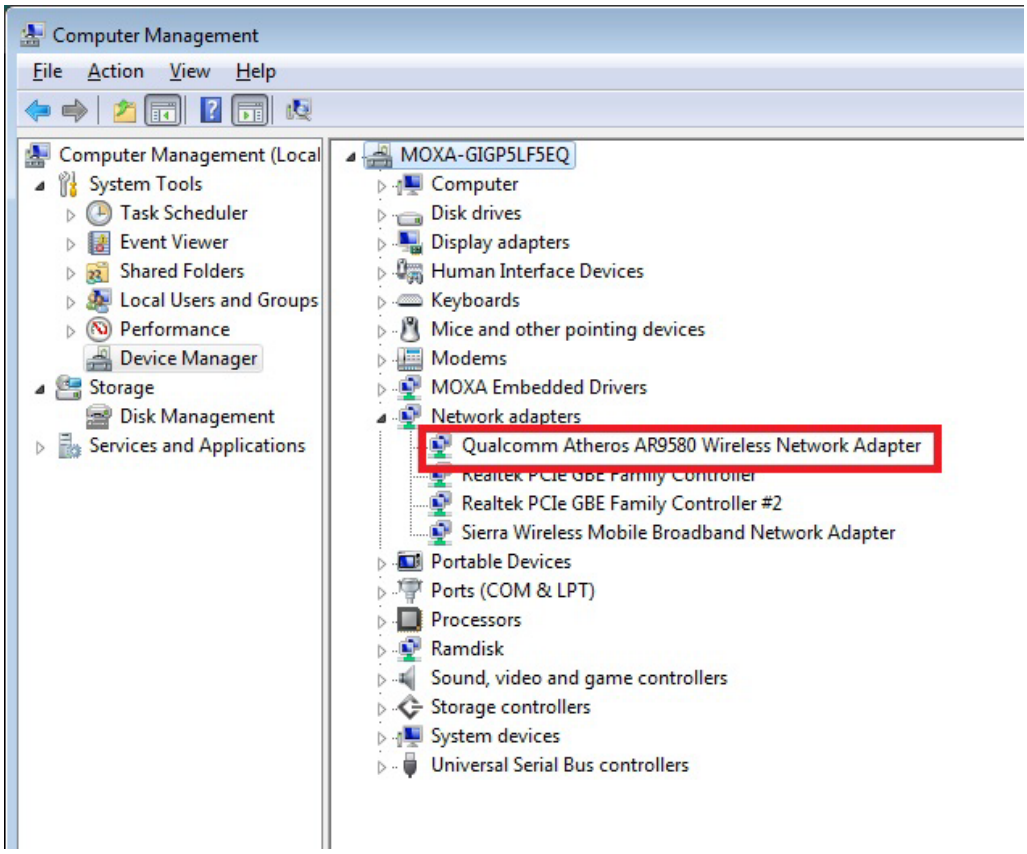
4. Check **I accept the terms of the license agreement** and click **Next**.


Qualcomm Atheros Client Installation Program
License Agreement
Please read the following license agreement carefully.
Qualcomm Atheros Communications, Inc. Software License Agreement
PLEASE READ THIS SOFTWARE LICENSE AGREEMENT ("LICENSE") CAREFULLY BEFORE USING THE Qualcomm Atheros SOFTWARE. BY USING THE Qualcomm Atheros SOFTWARE, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THIS LICENSE.
IF YOU DO NOT AGREE TO THE TERMS OF THIS LICENSE, DO NOT USE THE SOFTWARE. IF YOU DO NOT AGREE TO THE TERMS OF THE LICENSE, YOU MAY RETURN THE Qualcomm Atheros SOFTWARE TO THE PLACE WHERE YOU OBTAINED IT FOR A REFUND. IF THE Qualcomm Atheros SOFTWARE WAS ACCESSED ELECTRONICALLY, CLICK "DISAGREE/DECLINE". FOR Qualcomm
I accept the terms of the license agreement
I do not accept the terms of the license agreement
Print
InstallShield
< Back
Next >
Cancel

5. Click **Finish** to complete the installation.

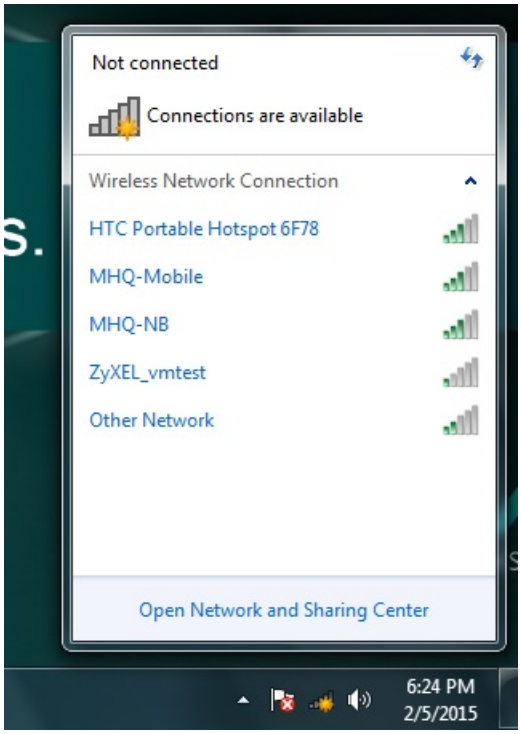

Qualcomm Atheros Client Installation Program
InstallShield Wizard Complete
The installation program has successfully performed the selected operations. Click Finish to exit the Wizard.
< Back
Finish
Cancel

6. The system should locate the new hardware and install the driver automatically. Check **Windows Device Manager** to verify.



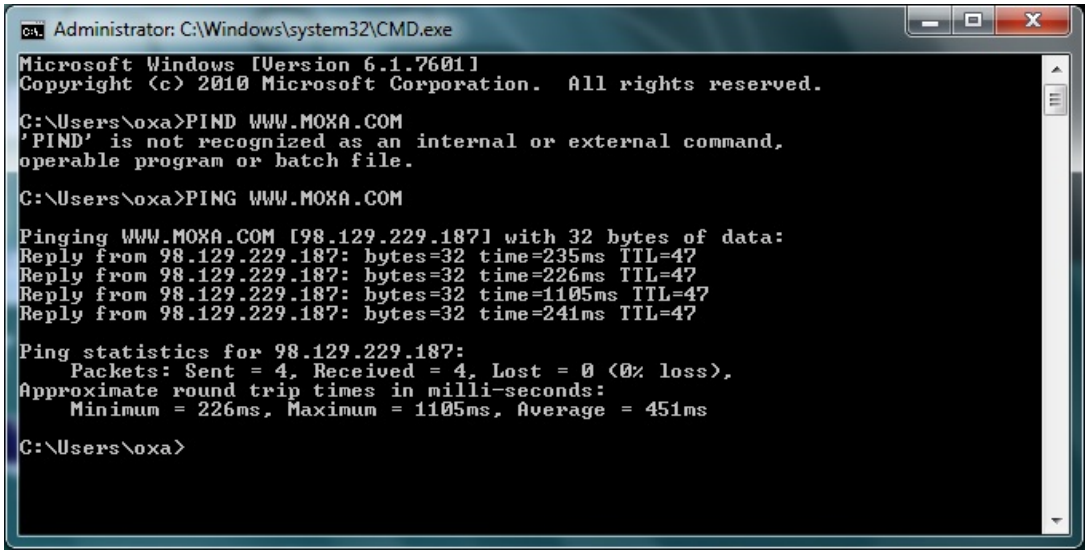
WiFi Module Configuration

1. After installing the WiFi module driver, select wireless network connection from the taskbar.



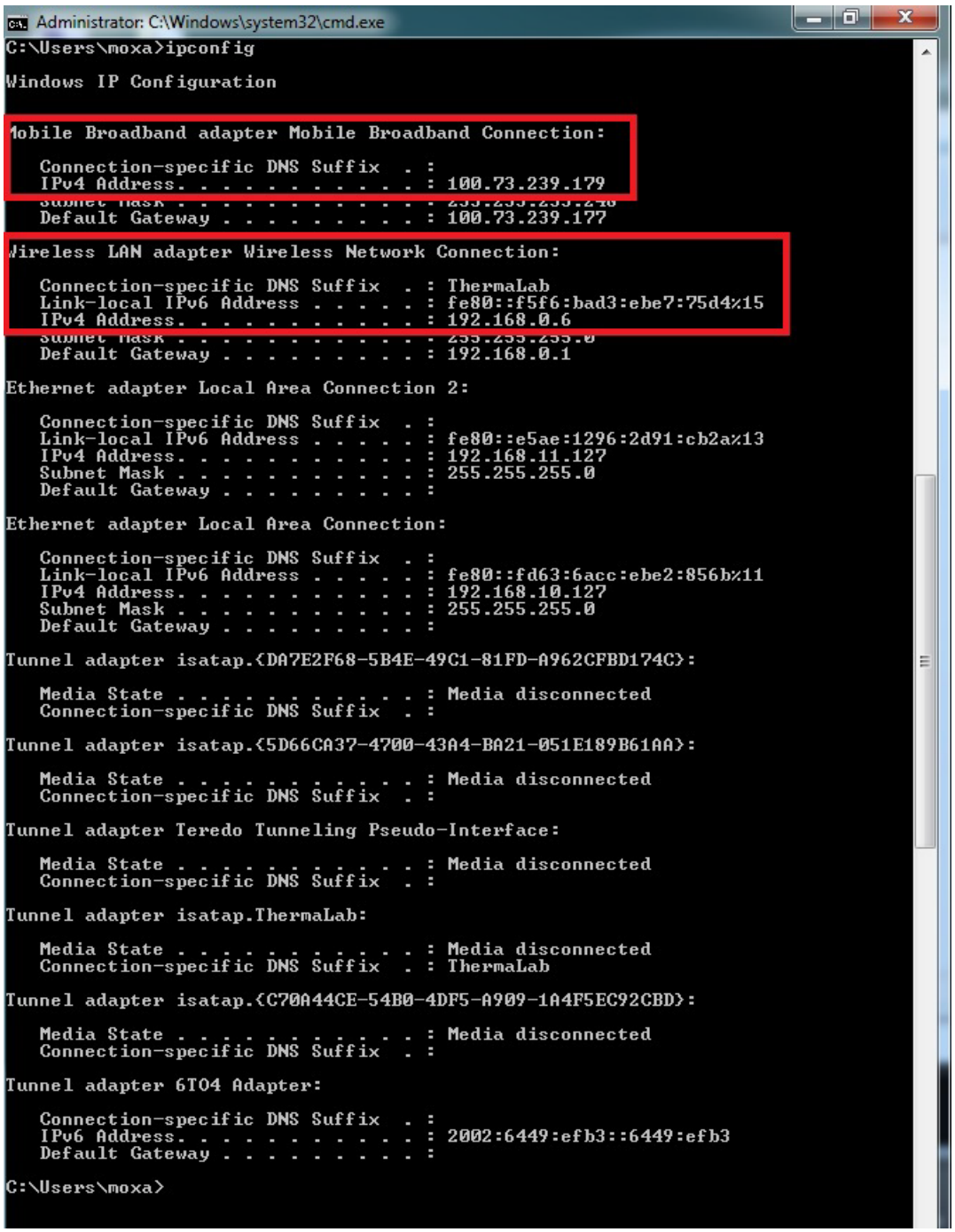
2. Enter the password to connect to the network.

3. You may verify the cellular connection by pinging the interface once the connection is established.

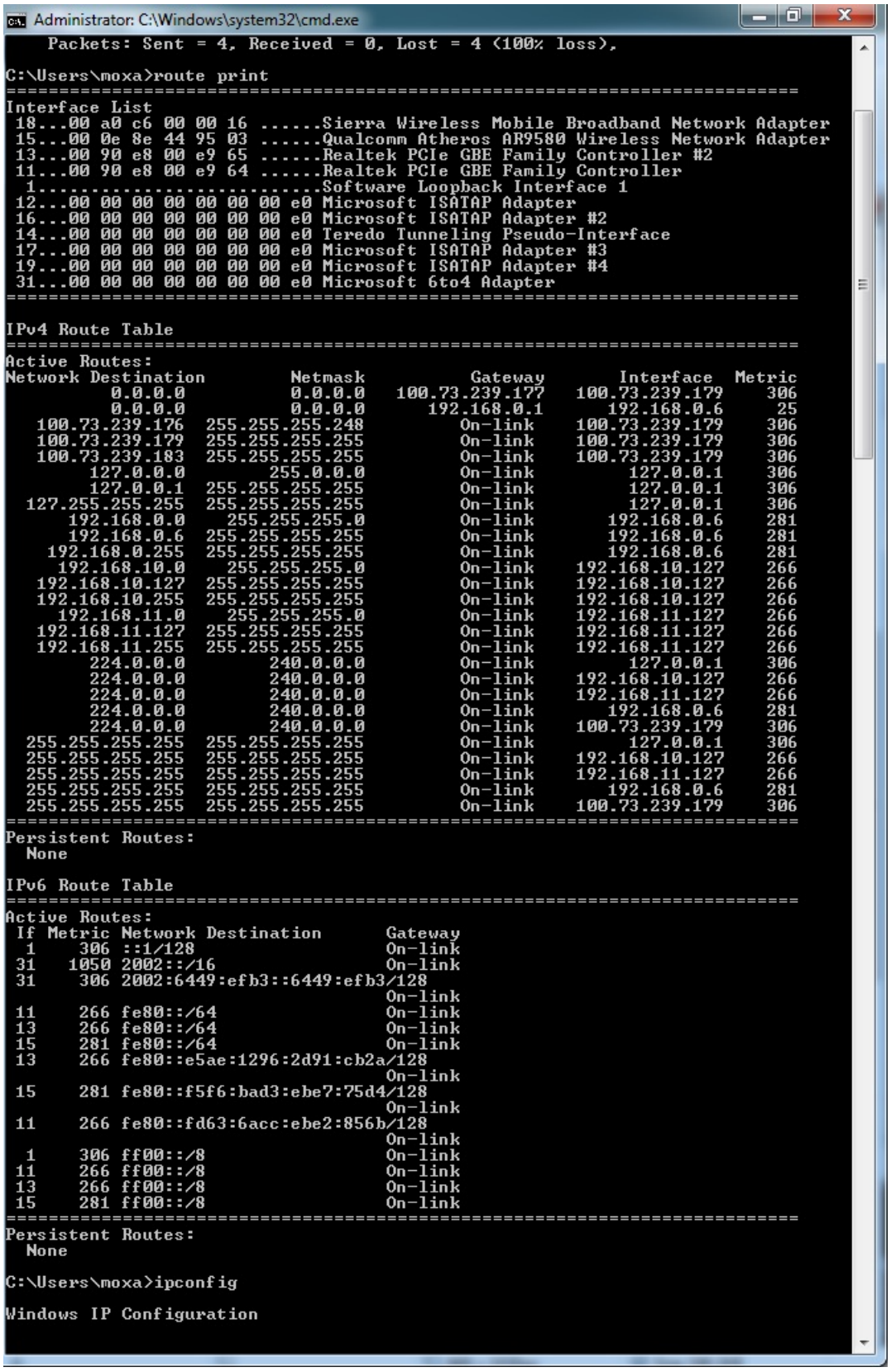

Administrator: C:\Windows\system32\CMD.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2010 Microsoft Corporation. All rights reserved.
C:\Users\oxa>PIND WWW.MOXA.COM
'PIND' is not recognized as an internal or external command,
operable program or batch file.
C:\Users\oxa>PING WWW.MOXA.COM
Pinging WWW.MOXA.COM [98.129.229.187] with 32 bytes of data:
Reply from 98.129.229.187: bytes=32 time=235ms TTL=47
Reply from 98.129.229.187: bytes=32 time=226ms TTL=47
Reply from 98.129.229.187: bytes=32 time=1105ms TTL=47
Reply from 98.129.229.187: bytes=32 time=241ms TTL=47
Ping statistics for 98.129.229.187:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 226ms, Maximum = 1105ms, Average = 451ms
C:\Users\oxa>

Choosing the Gateway when WiFi and Cellular are Connected at the Same Time

1. Open the **Start Menu** and type **cmd** in the Start Menu search box.
2. Click cmd from the search results, which should appear directly under Programs.
3. When the Command Prompt window opens, type **ipconfig** in the command prompt window to display the IP addresses of the WiFi connection and cellular connection. In the example shown below, the IP address of the WiFi connection is **192.168.0.6**, and the IP address of the cellular connection is **100.73.239.179**.

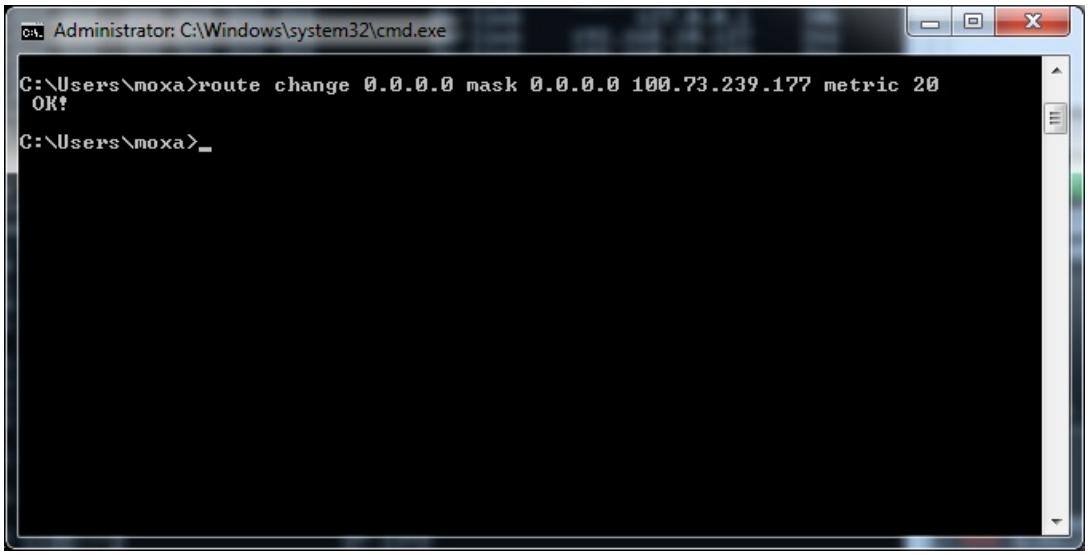

Administrator: C:\Windows\system32\cmd.exe
C:\Users\moxa>ipconfig
Windows IP Configuration
Mobile Broadband adapter Mobile Broadband Connection:
Connection-specific DNS Suffix . :
IPv4 Address. . . . . : 100.73.239.179
Default Gateway . . . . . : 100.73.239.177
Wireless LAN adapter Wireless Network Connection:
Connection-specific DNS Suffix . : ThermaLab
Link-local IPv6 Address . . . . . : fe80::f5f6:bad3:ebe7:75d4%15
IPv4 Address. . . . . : 192.168.0.6
Default Gateway . . . . . : 192.168.0.1
Ethernet adapter Local Area Connection 2:
Connection-specific DNS Suffix . :
Link-local IPv6 Address . . . . . : fe80::e5ae:1296:2d91:cb2a%13
IPv4 Address. . . . . : 192.168.11.127
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . :
Ethernet adapter Local Area Connection:
Connection-specific DNS Suffix . :
Link-local IPv6 Address . . . . . : fe80::fd63:6acc:ebe2:856b%11
IPv4 Address. . . . . : 192.168.10.127
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . :
Tunnel adapter isatap.{DA7E2F68-5B4E-49C1-81FD-A962CFBD174C}:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Tunnel adapter isatap.{5D66CA37-4700-43A4-BA21-051E189B61AA}:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Tunnel adapter Teredo Tunneling Pseudo-Interface:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Tunnel adapter isatap.ThermaLab:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . : ThermaLab
Tunnel adapter isatap.{C70A44CE-54B0-4DF5-A909-1A4F5EC92CBD}:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Tunnel adapter 6TO4 Adapter:
Connection-specific DNS Suffix . :
IPv6 Address. . . . . : 2002:6449:efb3::6449:efb3
Default Gateway . . . . . :
C:\Users\moxa>

4. Windows 7 will choose the lowest Metric value for the connection interface if there are several routes with the same network destination and netmask. In this case, the WiFi interface is the connection interface.



```
Administrator: C:\Windows\system32\cmd.exe
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Users\moxa>route print
===========================================================================
Interface List
 18...00 a0 c6 00 00 16 ......Sierra Wireless Mobile Broadband Network Adapter
 15...00 0e 8e 44 95 03 ......Qualcomm Atheros AR9580 Wireless Network Adapter
 13...00 90 e8 00 e9 65 ......Realtek PCIe GBE Family Controller #2
 11...00 90 e8 00 e9 64 ......Realtek PCIe GBE Family Controller
  1...........................Software Loopback Interface 1
 12...00 00 00 00 00 00 00 e0 Microsoft ISATAP Adapter
 16...00 00 00 00 00 00 00 e0 Microsoft ISATAP Adapter #2
 14...00 00 00 00 00 00 00 e0 Teredo Tunneling Pseudo-Interface
 17...00 00 00 00 00 00 00 e0 Microsoft ISATAP Adapter #3
 19...00 00 00 00 00 00 00 e0 Microsoft ISATAP Adapter #4
 31...00 00 00 00 00 00 00 e0 Microsoft 6to4 Adapter
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
Network Destination        Netmask          Gateway       Interface  Metric
          0.0.0.0          0.0.0.0   100.73.239.177   100.73.239.179     306
          0.0.0.0          0.0.0.0      192.168.0.1      192.168.0.6      25
    100.73.239.176  255.255.255.248         On-link    100.73.239.179     306
    100.73.239.179  255.255.255.255         On-link    100.73.239.179     306
    100.73.239.183  255.255.255.255         On-link    100.73.239.179     306
        127.0.0.0        255.0.0.0         On-link         127.0.0.1     306
        127.0.0.1  255.255.255.255         On-link         127.0.0.1     306
  127.255.255.255  255.255.255.255         On-link         127.0.0.1     306
      192.168.0.0    255.255.255.0         On-link       192.168.0.6     281
      192.168.0.6  255.255.255.255         On-link       192.168.0.6     281
    192.168.0.255  255.255.255.255         On-link       192.168.0.6     281
     192.168.10.0    255.255.255.0         On-link    192.168.10.127     266
   192.168.10.127  255.255.255.255         On-link    192.168.10.127     266
   192.168.10.255  255.255.255.255         On-link    192.168.10.127     266
     192.168.11.0    255.255.255.0         On-link    192.168.11.127     266
   192.168.11.127  255.255.255.255         On-link    192.168.11.127     266
   192.168.11.255  255.255.255.255         On-link    192.168.11.127     266
        224.0.0.0        240.0.0.0         On-link         127.0.0.1     306
        224.0.0.0        240.0.0.0         On-link    192.168.10.127     266
        224.0.0.0        240.0.0.0         On-link    192.168.11.127     266
        224.0.0.0        240.0.0.0         On-link       192.168.0.6     281
        224.0.0.0        240.0.0.0         On-link    100.73.239.179     306
  255.255.255.255  255.255.255.255         On-link         127.0.0.1     306
  255.255.255.255  255.255.255.255         On-link    192.168.10.127     266
  255.255.255.255  255.255.255.255         On-link    192.168.11.127     266
  255.255.255.255  255.255.255.255         On-link       192.168.0.6     281
  255.255.255.255  255.255.255.255         On-link    100.73.239.179     306
===========================================================================
Persistent Routes:
  None

IPv6 Route Table
===========================================================================
Active Routes:
 If Metric Network Destination      Gateway
  1    306 ::1/128                  On-link
 31   1050 2002::/16                On-link
 31    306 2002:6449:efb3::6449:efb3/128
                                    On-link
 11    266 fe80::/64                On-link
 13    266 fe80::/64                On-link
 15    281 fe80::/64                On-link
 13    266 fe80::e5ae:1296:2d91:cb2a/128
                                    On-link
 15    281 fe80::f5f6:bad3:ebe7:75d4/128
                                    On-link
 11    266 fe80::fd63:6acc:ebe2:856b/128
                                    On-link
  1    306 ff00::/8                 On-link
 11    266 ff00::/8                 On-link
 13    266 ff00::/8                 On-link
 15    281 ff00::/8                 On-link
===========================================================================
Persistent Routes:
  None

C:\Users\moxa>ipconfig

Windows IP Configuration
```

5. If you want to change to using cellular as the connection interface, just reduce the Metric value of the cellular interface so that the value is less than the WiFi's Metric value.



7

System Recovery

This chapter describes the system recovery process that you can perform if the system is not functioning properly.

The following topics are covered in this chapter:

- **Overview**
- **Setting Up the Recovery Environment**
- **Setting Up a Factory Default Recovery Image**
  - Step 1: Prepare the USB drive
  - Step 2: Setting the BIOS to Boot via USB
  - Step 3: How to Perform a System Recovery
  - Step 4: Reset the BIOS to its Original State
- **Creating a Custom System Image**

Overview

This section describes how to prepare your computer for recovery in the event the system becomes unstable. You can perform a system recovery using one of the following system images:

- A clean factory default image.
- A user-generated image created from a fully configured, fully set up system.

Before you perform a system recovery, set up the system environment.

Setting Up the Recovery Environment

To set up the recovery environment on a V2201 computer, prepare a USB drive that has at least 4 GB of memory and a copy of the recovery suite.

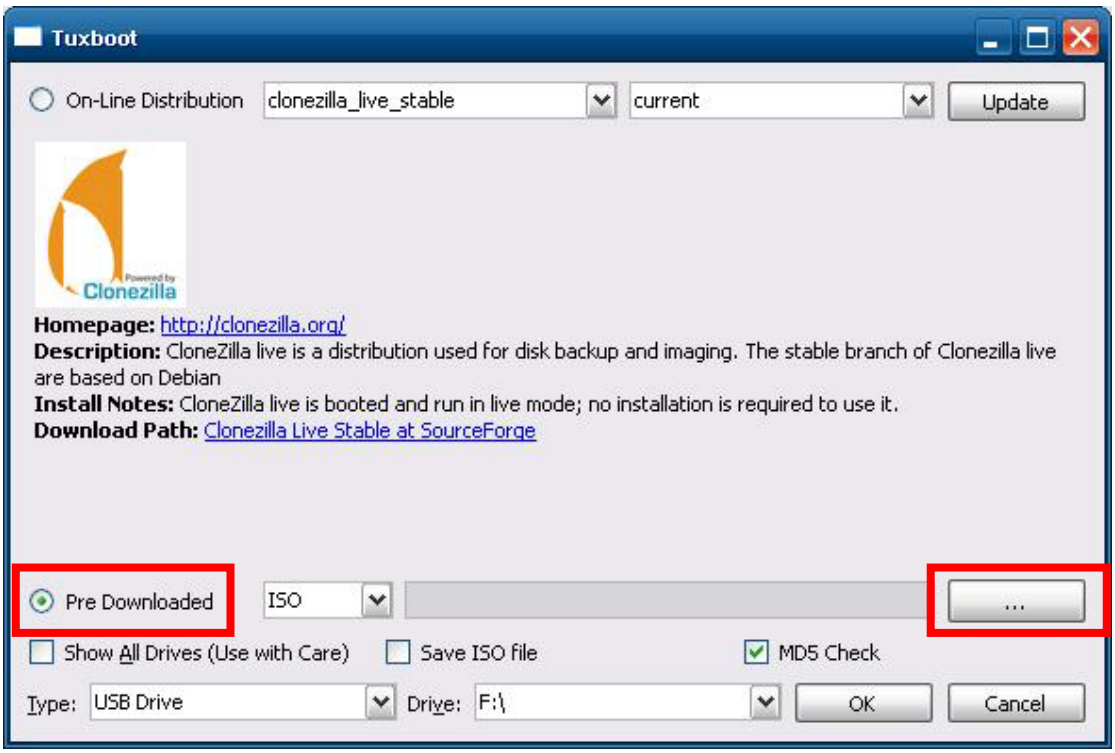
The following lists the major steps in the recovery procedure:

1. Copy the recovery programs and system image file on to the USB drive. Set up the drive as a live-drive system with an ISO image of the boot environment.
2. Reboot the system and configure the BIOS to boot the recovery system from the USB port.
3. An image of the current software system will be created on the USB drive. The recovery environment will use this image when restoring the system.
4. Reboot the system again and the BIOS is returned to its original state.

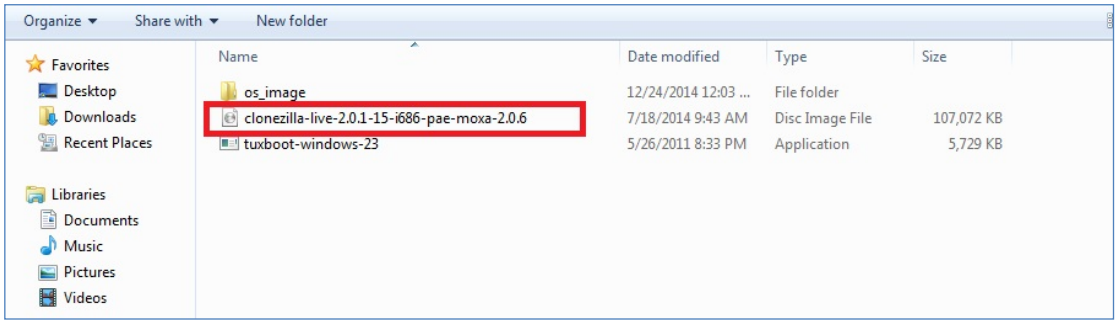
Setting Up a Factory Default Recovery Image

Step 1: Preparing the USB drive

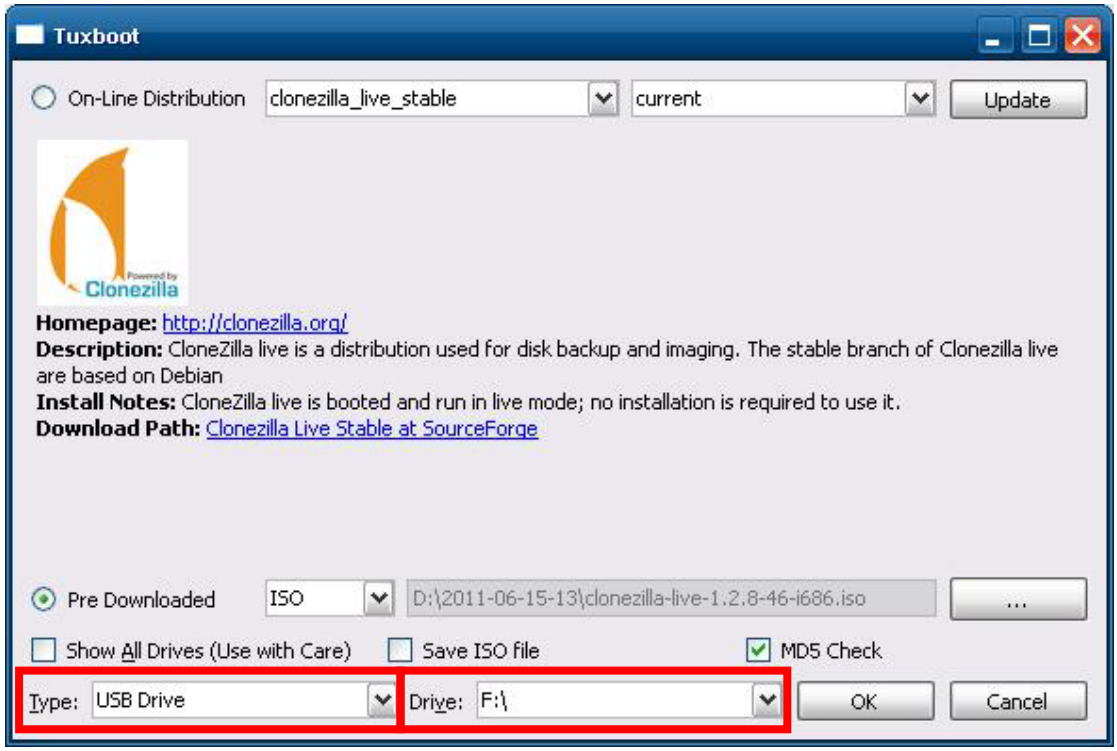
1. Load the software DVD that came with your V2201 computer and execute **tuxboot-windows-23.exe** in the **\recovery** folder.
2. Select **Pre Downloaded** and click the ellipsis (**...**) button to browse the file system and locate the boot environment's ISO image.



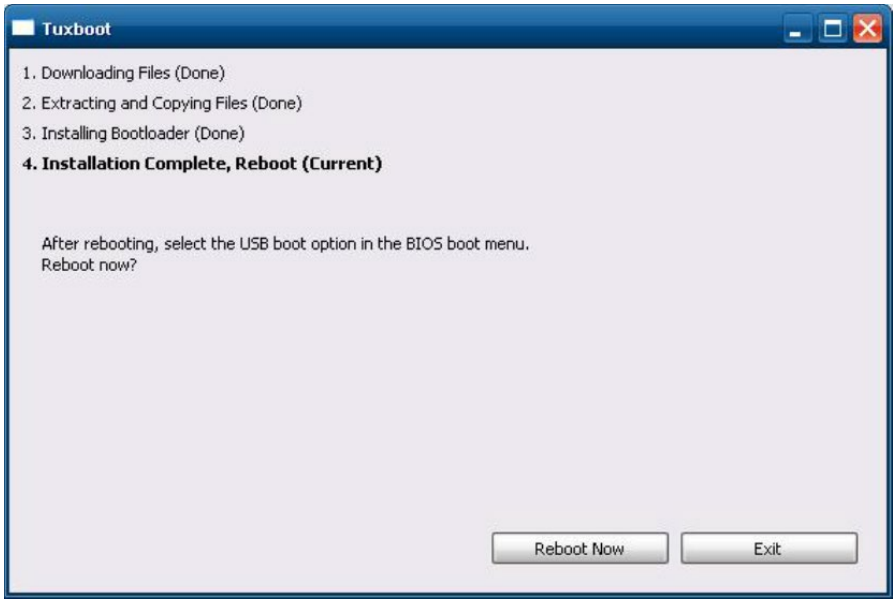
3. Navigate to the **\recovery** folder on the software DVD and select the boot environment's ISO image.



4. Select **USB Drive** from the **Type** drop-down list and select the drive letter that corresponds to the USB drive from the **Drive** drop-down list. Click **OK** to copy the boot environment and bootloader to your USB drive.

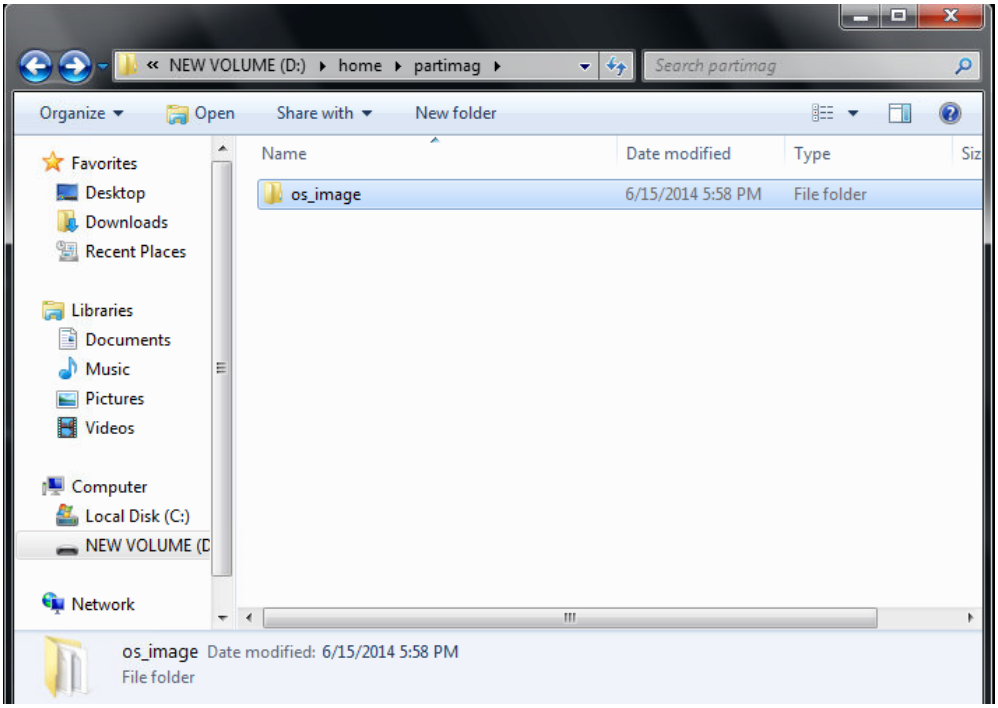


5. Click **Exit**.


Tuxboot
1. Downloading Files (Done)
2. Extracting and Copying Files (Done)
3. Installing Bootloader (Done)
4. Installation Complete, Reboot (Current)
After rebooting, select the USB boot option in the BIOS boot menu.
Reboot now?
Reboot Now
Exit

6. From the desktop, copy the directory containing the base OS from the software DVD on to the USB drive. That is, copy **#:\<SoftwareDVD>\recovery\os_image** to the partition image directory, **F:\home\partimag**, on the USB drive.
   However, if you want to recover from your own system image, back up a system image first. For more information, refer to the **Creating a Custom System Image** section.

After **Step 1** procedure is complete, proceed to the next section, **Step 2: Set the BIOS to Boot via USB**.



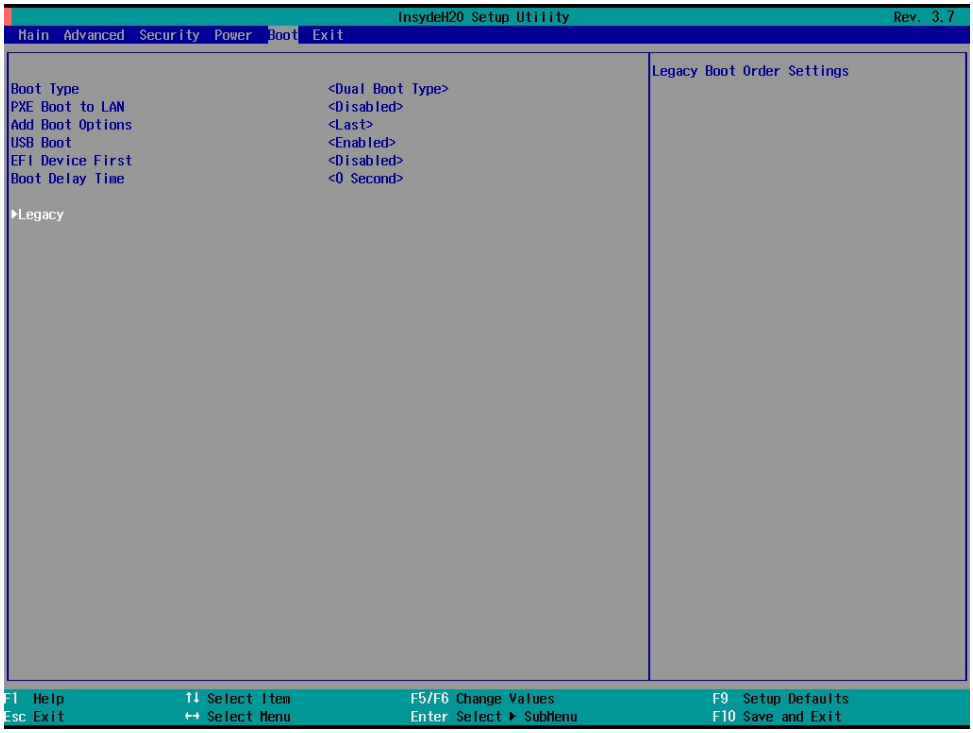
Step 2: Set the BIOS to Boot via USB

This step shows you how to reset the BIOS so the system can boot directly from the USB port. You must perform this action before you can continue to configure the system recovery environment.

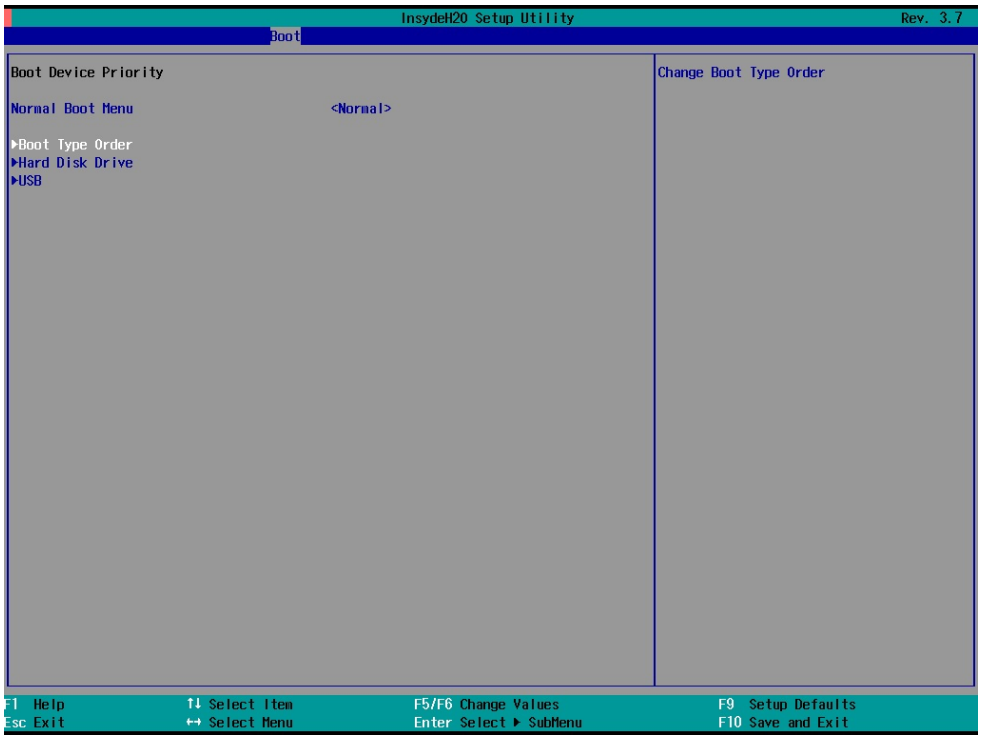
1. Reboot the system, and, during the POST process, press **F2** until you hear a long beep. Click **SCU** to enter the BIOS setup menu.

2. Use the left and right arrow keys to navigate to the **Boot** menu.

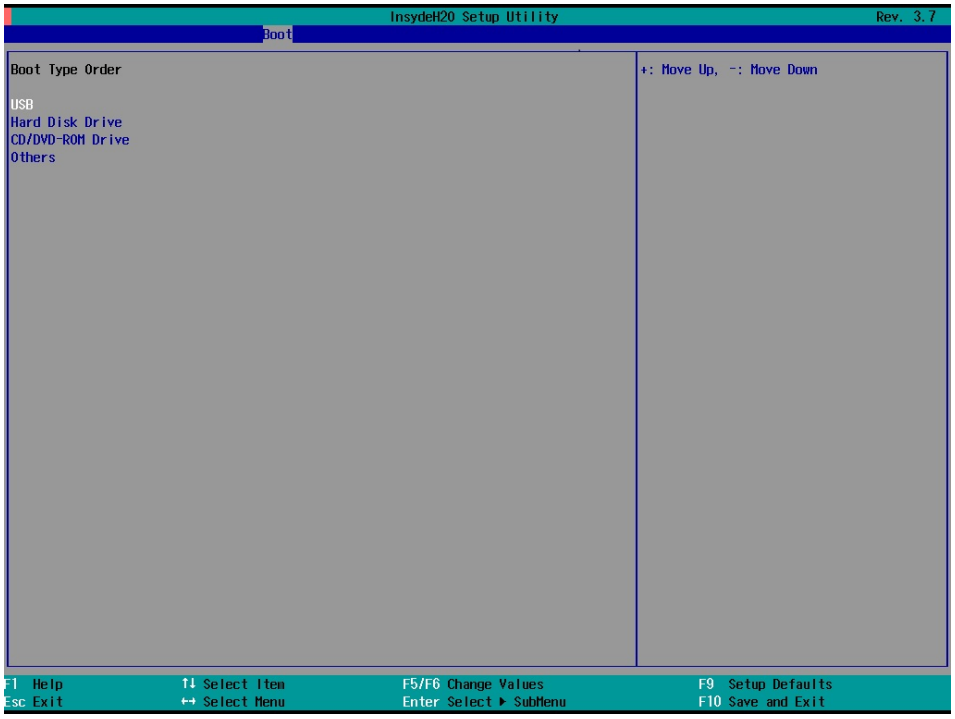
3. Use the up and down arrow keys to navigate to the **Legacy** link; then, press [Enter].



4. Use the up and down arrow keys to navigate to the **Boot Type Order** link; then, press [Enter].



5. Use the up and down arrow keys to navigate to the **USB** link; then, use the plus or minus (+/-) key to move **USB** to the top of boot priority list.



6. Press **F10** and [Enter] to save and exit the BIOS configuration interface. This sets the system to reboot from the hard drive.

Step 3: Performing a System Recovery

This step describes how to perform a system recovery. We include this as step 3 of the installation so administrators can first perform a test run before deploying the system to the field.

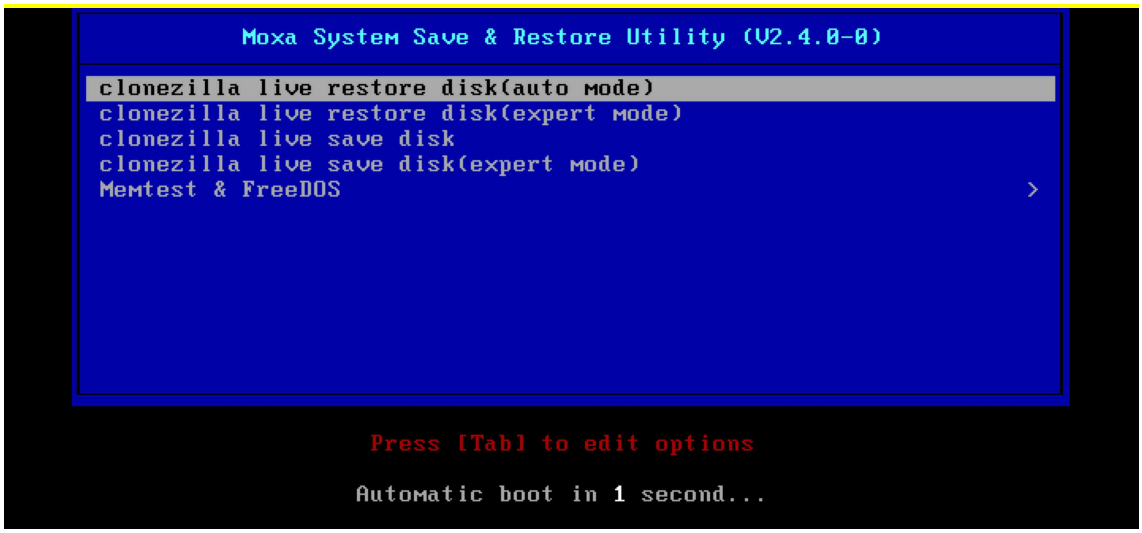
To begin the system recovery process, configure the BIOS settings as described in the previous section, **Step 2: Set the BIOS to Boot via USB**. Then, connect the USB recovery drive to any USB port on the V2201 and reboot the computer. If you have successfully prepared the USB and BIOS, the computer will boot into the Clonezilla boot loader from the USB port.

There are 2 kinds of recovery process in Clonezilla: **auto mode** and **expert mode**:

- Select **auto mode** to complete the recovery task **if you want Clonezilla to help you recover the MBR and expand the image automatically**.
- Select **expert mode** to see a **list of selectable options for completing the recovery task**.

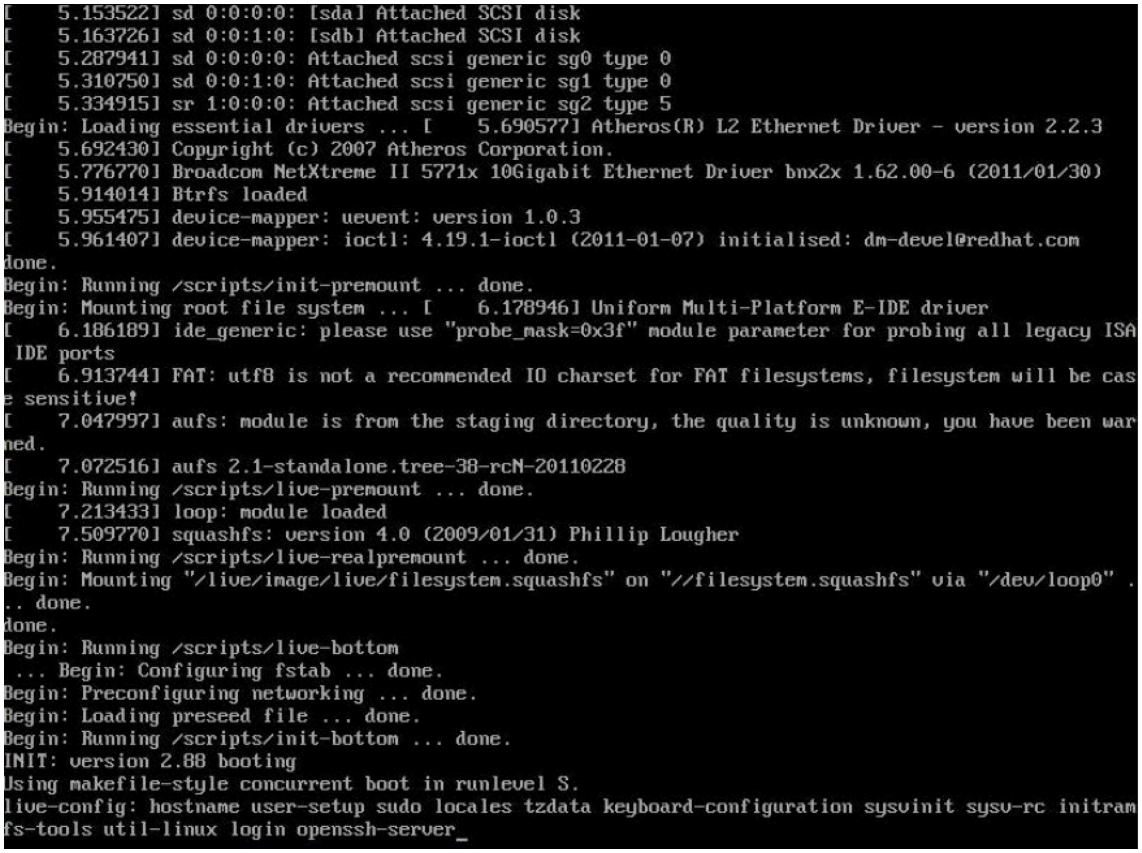
Auto mode:

1. Select the **clonezilla live restore disk(auto Mode)** option in the boot loader window to boot the system in auto mode for system recovery.


Moxa System Save & Restore Utility (V2.4.0-0)
clonezilla live restore disk(auto mode)
clonezilla live restore disk(expert mode)
clonezilla live save disk
clonezilla live save disk(expert mode)
Memtest & FreeDOS
Press [Tab] to edit options
Automatic boot in 1 second...

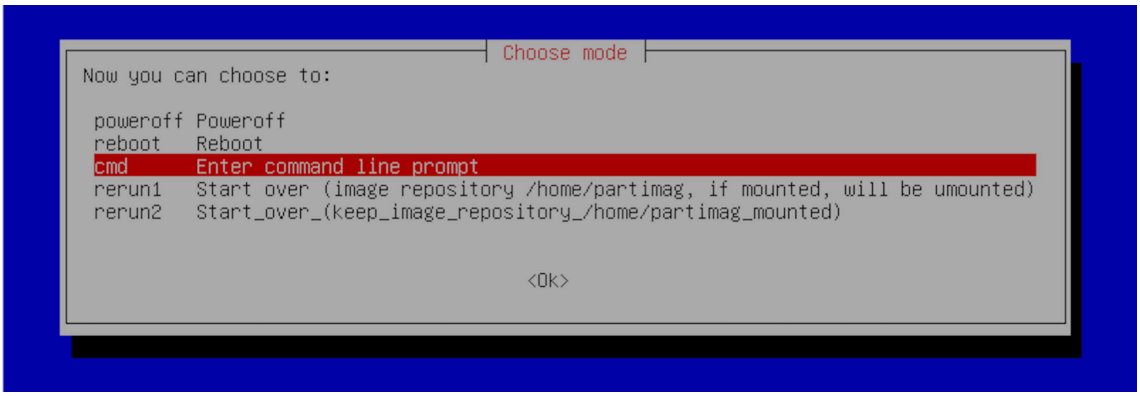
2. Wait until the boot process is complete.

NOTE You can press any key or use **CTRL+C** to cancel the recovery process and exit Clonezilla.


[5.153522] sd 0:0:0:0: [sda] Attached SCSI disk
[5.163726] sd 0:0:1:0: [sdb] Attached SCSI disk
[5.287941] sd 0:0:0:0: Attached scsi generic sg0 type 0
[5.310750] sd 0:0:1:0: Attached scsi generic sg1 type 0
[5.334915] sr 1:0:0:0: Attached scsi generic sg2 type 5
Begin: Loading essential drivers ... [5.690577] Atheros(R) L2 Ethernet Driver - version 2.2.3
[5.692430] Copyright (c) 2007 Atheros Corporation.
[5.776770] Broadcom NetXtreme II 5771x 10Gigabit Ethernet Driver bnx2x 1.62.00-6 (2011/01/30)
[5.914014] Btrfs loaded
[5.955475] device-mapper: uevent: version 1.0.3
[5.961407] device-mapper: ioctl: 4.19.1-ioctl (2011-01-07) initialised: dm-devel@redhat.com
done.
Begin: Running /scripts/init-premount ... done.
Begin: Mounting root file system ... [6.178946] Uniform Multi-Platform E-IDE driver
[6.186189] ide_generic: please use "probe_mask=0x3f" module parameter for probing all legacy ISA
IDE ports
[6.913744] FAT: utf8 is not a recommended IO charset for FAT filesystems, filesystem will be cas
e sensitive!
[7.047997] aufs: module is from the staging directory, the quality is unknown, you have been war
ned.
[7.072516] aufs 2.1-standalone.tree-38-rcN-20110228
Begin: Running /scripts/live-premount ... done.
[7.213433] loop: module loaded
[7.509770] squashfs: version 4.0 (2009/01/31) Phillip Lougher
Begin: Running /scripts/live-realpremount ... done.
Begin: Mounting "/live/image/live/filesystem.squashfs" on "//filesystem.squashfs" via "/dev/loop0" .
.. done.
done.
Begin: Running /scripts/live-bottom
... Begin: Configuring fstab ... done.
Begin: Preconfiguring networking ... done.
Begin: Loading preseed file ... done.
Begin: Running /scripts/init-bottom ... done.
INIT: version 2.88 booting
Using makefile-style concurrent boot in runlevel S.
live-config: hostname user-setup sudo locales tzdata keyboard-configuration sysvinit sysv-rc initram
fs-tools util-linux login openssh-server_

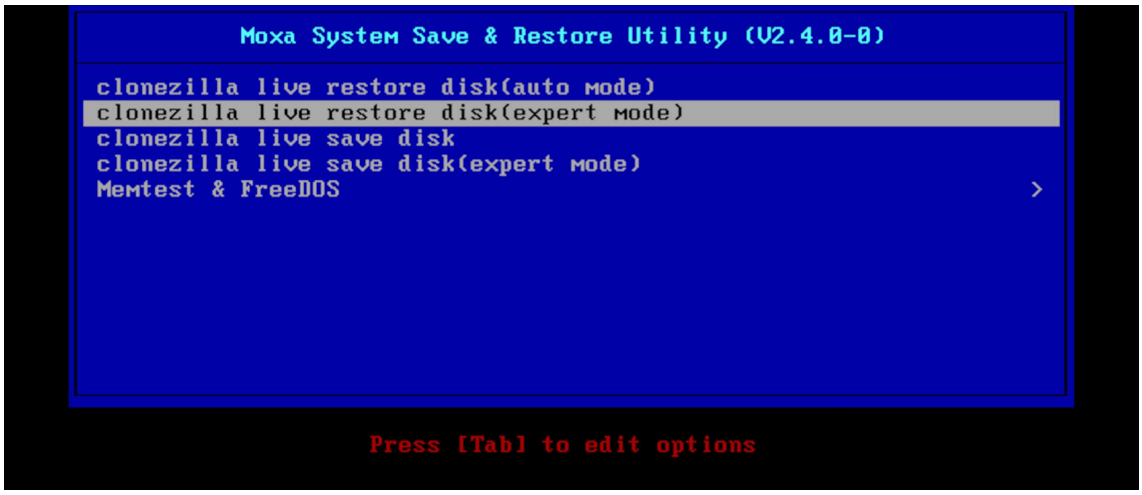
3. Choose one of the following options and press **Enter** to continue:

Select	to
poweroff	power off the system
reboot	reboot the system
cmd	access the console terminal
rerun1,rerun2	restart the entire procedure

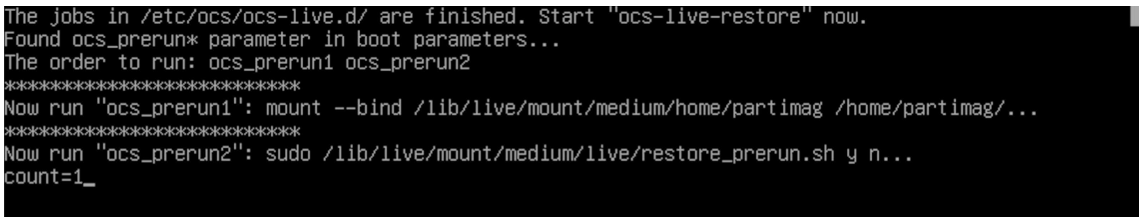

Choose mode
Now you can choose to:
poweroff Poweroff
reboot Reboot
cmd Enter command line prompt
rerun1 Start over (image repository /home/partimag, if mounted, will be umounted)
rerun2 Start_over_(keep_image_repository_/home/partimag_mounted)
<Ok>

Expert mode:

1. Select the **clonezilla live restore disk(expert Mode)** option in the boot loader window to start the system in expert mode for system recovery.


Moxa System Save & Restore Utility (V2.4.0-0)
clonezilla live restore disk(auto mode)
clonezilla live restore disk(expert mode)
clonezilla live save disk
clonezilla live save disk(expert mode)
Memtest & FreeDOS
Press [Tab] to edit options

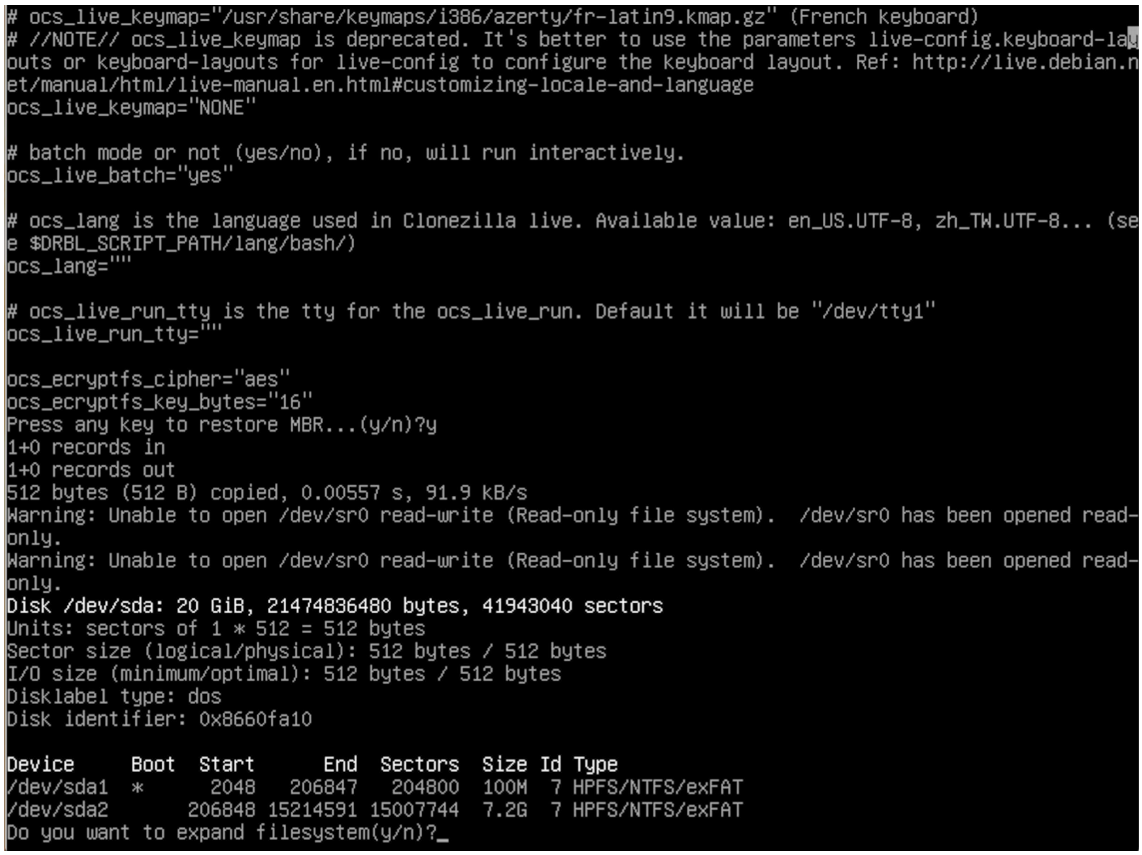
2. Press **Enter** to continue with the system recovery process.


The jobs in /etc/ocs/ocs-live.d/ are finished. Start "ocs-live-restore" now.
Found ocs_prerun* parameter in boot parameters...
The order to run: ocs_prerun1 ocs_prerun2
****
Now run "ocs_prerun1": mount --bind /lib/live/mount/medium/home/partimag /home/partimag/...
****
Now run "ocs_prerun2": sudo /lib/live/mount/medium/live/restore_prerun.sh y n...
count=1_

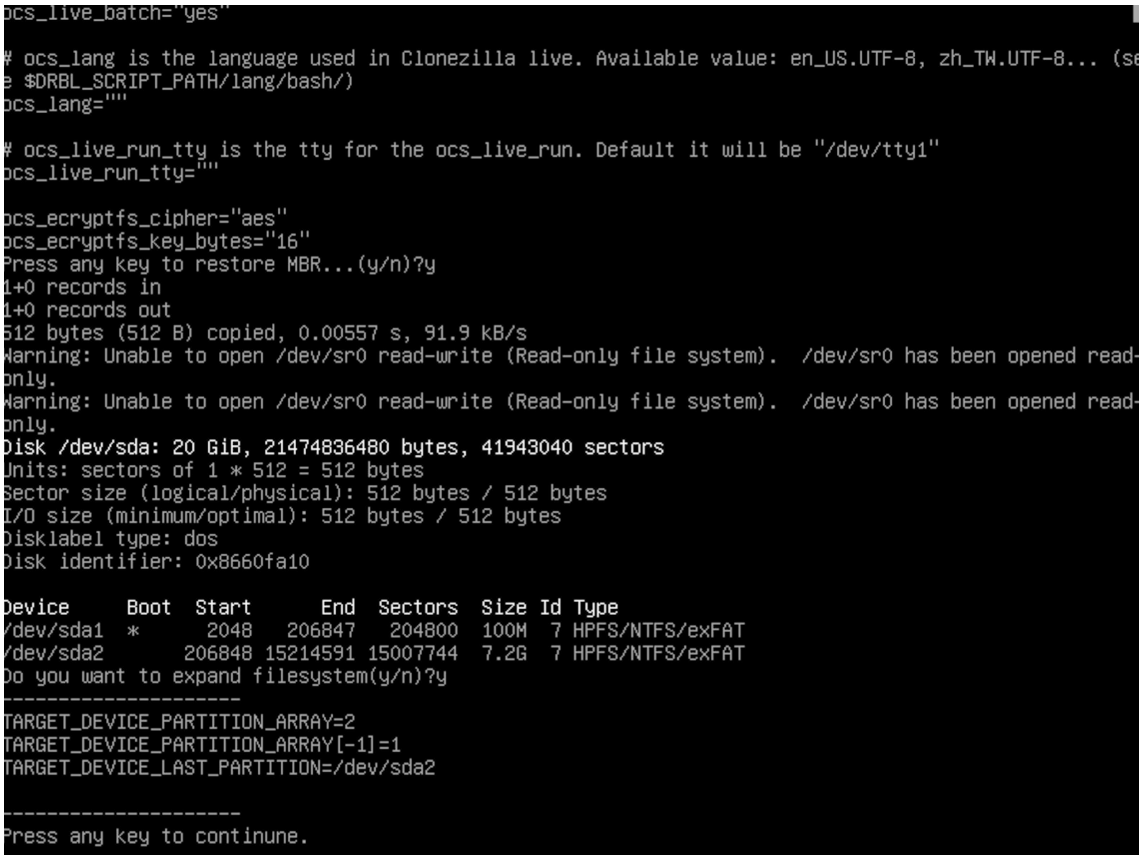
3. Specify if the restore utility should restore the MBR from an image or not. Type **y** at the console prompt to restore from an image and press **Enter** to continue.

****
Now run "ocs_prerun2": sudo /lib/live/mount/medium/live/restore_prerun.sh y n...
count=1
ocs_live_extra_param="-g auto -e1 auto -e2 -c -icds -j2 -k -p true restoredisk os_image sda"
-g auto -e1 auto -e2 -c -icds -j2 -k -p true restoredisk os_image sda
ocs_live_run is the main program to run in Clonezilla live to save or restore. or other command. A
vailable program: ocs-live-general, ocs-live-restore or any command you write. Use the Absolute path
in Clonezilla live.
ocs_live_run="ocs-live-restore"
# ocs_live_extra_param will be used only when ocs_live_run=ocs-live-restore (not for ocs-live-genera
l or any other), then it will be passed to ocs-sr. Therefore these parameters are actually those of
ocs-sr.
# Ex: ocs_live_extra_param="-b -c restoredisk sarge-r5 hda"
ocs_live_extra_param="-g auto -e1 auto -e2 -c -icds -j2 -k -p true restoredisk os_image sda"
# ocs_live_keymap is for keymap used in Clonezilla live. Man install-keymap for more details. Ex:
# ocs_live_keymap="NONE" (won't change the default layout)
# ocs_live_keymap="/usr/share/keymaps/i386/azerty/fr-latin9.kmap.gz" (French keyboard)
# //NOTE// ocs_live_keymap is deprecated. It's better to use the parameters live-config.keyboard-lay
outs or keyboard-layouts for live-config to configure the keyboard layout. Ref: http://live.debian.n
et/manual/html/live-manual.en.html#customizing-locale-and-language
ocs_live_keymap="NONE"
# batch mode or not (yes/no), if no, will run interactively.
ocs_live_batch="yes"
# ocs_lang is the language used in Clonezilla live. Available value: en_US.UTF-8, zh_TW.UTF-8... (se
e $DRBL_SCRIPT_PATH/lang/bash/)
ocs_lang=""
# ocs_live_run_tty is the tty for the ocs_live_run. Default it will be "/dev/tty1"
ocs_live_run_tty=""
ocs_ecryptfs_cipher="aes"
ocs_ecryptfs_key_bytes="16"
Press any key to restore MBR...(y/n)?_

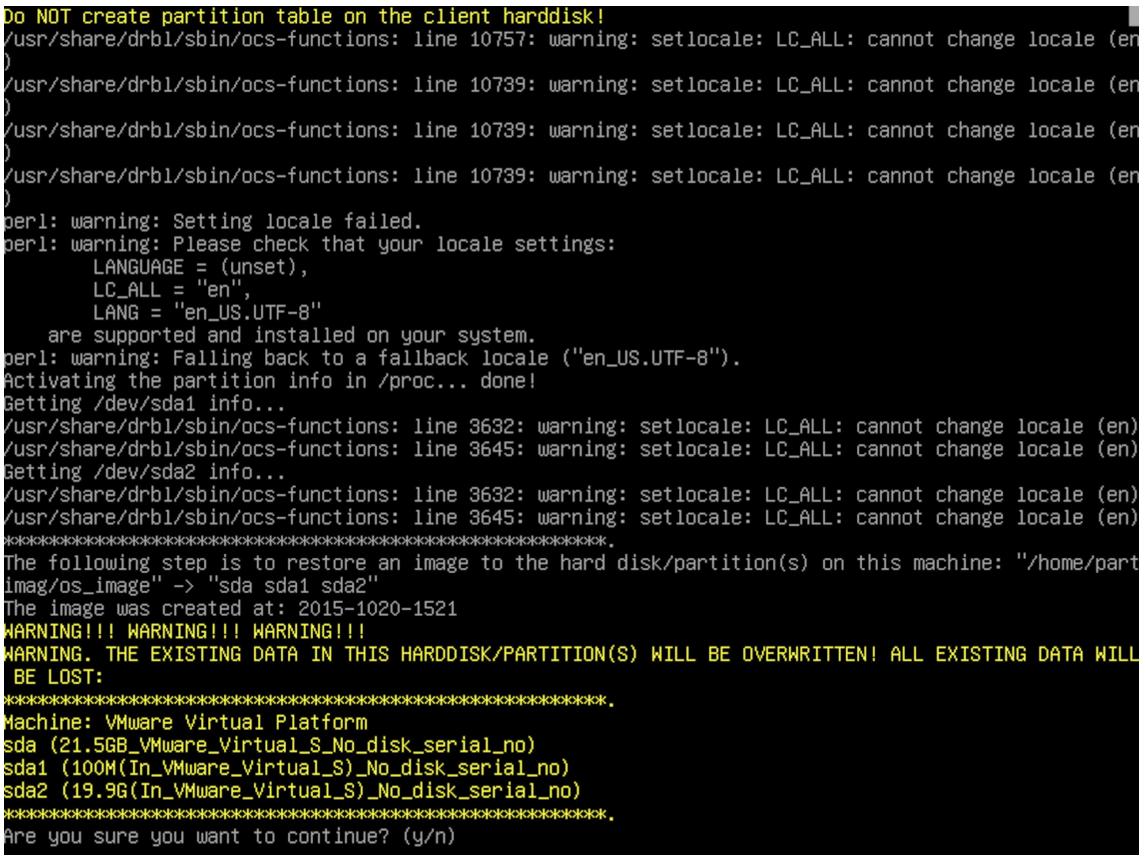
4. Specify if the restore utility should expand the file system during the recovery process. Type **y** at the command prompt to decompress the file system during the recovery process.


ocs_live_keymap="/usr/share/keymaps/i386/azerty/fr-latin9.kmap.gz" (French keyboard)
//NOTE// ocs_live_keymap is deprecated. It's better to use the parameters live-config.keyboard-lay
outs or keyboard-layouts for live-config to configure the keyboard layout. Ref: http://live.debian.n
et/manual/html/live-manual.en.html#customizing-locale-and-language
ocs_live_keymap="NONE"
# batch mode or not (yes/no), if no, will run interactively.
ocs_live_batch="yes"
# ocs_lang is the language used in Clonezilla live. Available value: en_US.UTF-8, zh_TW.UTF-8... (se
e $DRBL_SCRIPT_PATH/lang/bash/)
ocs_lang=""
# ocs_live_run_tty is the tty for the ocs_live_run. Default it will be "/dev/tty1"
ocs_live_run_tty=""
ocs_ecryptfs_cipher="aes"
ocs_ecryptfs_key_bytes="16"
Press any key to restore MBR...(y/n)?y
1+0 records in
1+0 records out
512 bytes (512 B) copied, 0.00557 s, 91.9 kB/s
Warning: Unable to open /dev/sr0 read-write (Read-only file system). /dev/sr0 has been opened read-
only.
Warning: Unable to open /dev/sr0 read-write (Read-only file system). /dev/sr0 has been opened read-
only.
Disk /dev/sda: 20 GiB, 21474836480 bytes, 41943040 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x8660fa10
Device Boot Start End Sectors Size Id Type
/dev/sda1 * 2048 206847 204800 100M 7 HPFS/NTFS/exFAT
/dev/sda2 206848 15214591 15007744 7.2G 7 HPFS/NTFS/exFAT
Do you want to expand filesystem(y/n)?_

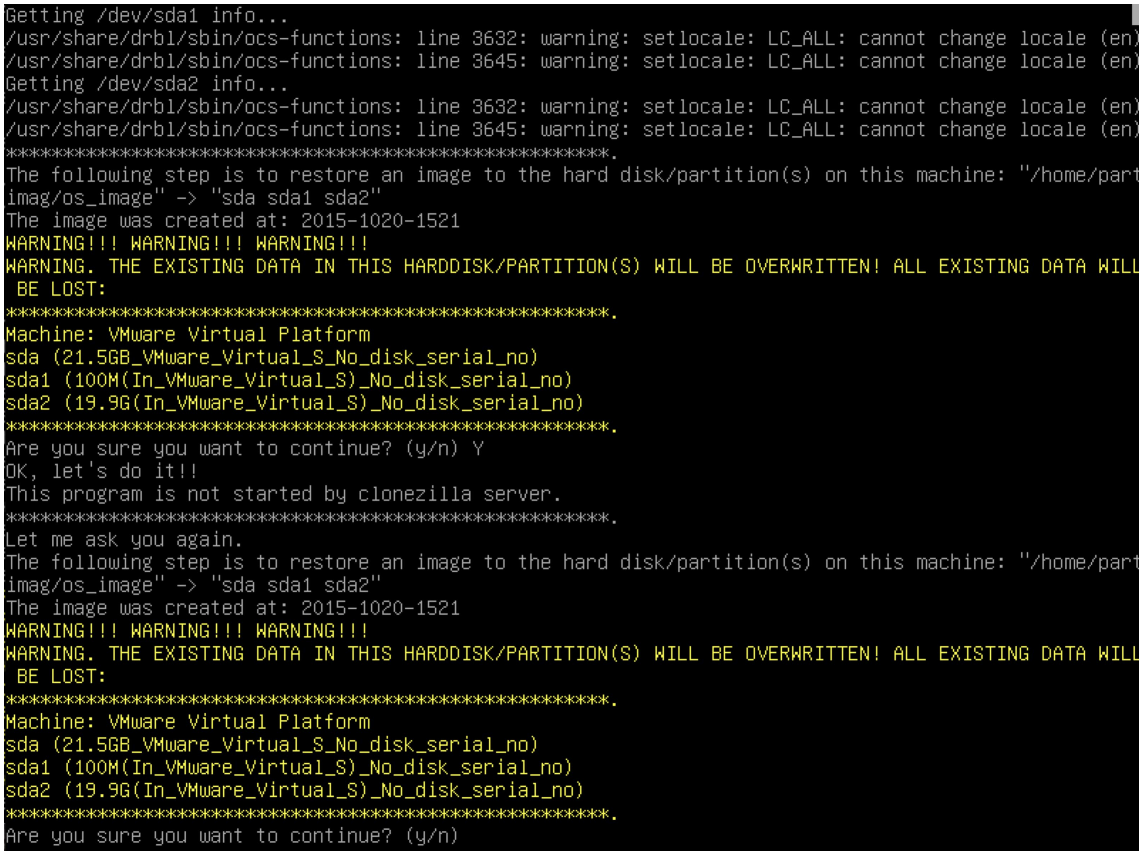
5. Press **Enter** to continue with the system recovery process.


ocs_live_batch="yes"
# ocs_lang is the language used in Clonezilla live. Available value: en_US.UTF-8, zh_TW.UTF-8... (se
e $DRBL_SCRIPT_PATH/lang/bash/)
ocs_lang=""
# ocs_live_run_tty is the tty for the ocs_live_run. Default it will be "/dev/tty1"
ocs_live_run_tty=""
ocs_ecryptfs_cipher="aes"
ocs_ecryptfs_key_bytes="16"
Press any key to restore MBR...(y/n)?y
1+0 records in
1+0 records out
512 bytes (512 B) copied, 0.00557 s, 91.9 kB/s
Warning: Unable to open /dev/sr0 read-write (Read-only file system). /dev/sr0 has been opened read-
only.
Warning: Unable to open /dev/sr0 read-write (Read-only file system). /dev/sr0 has been opened read-
only.
Disk /dev/sda: 20 GiB, 21474836480 bytes, 41943040 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x8660fa10
Device Boot Start End Sectors Size Id Type
/dev/sda1 * 2048 206847 204800 100M 7 HPFS/NTFS/exFAT
/dev/sda2 206848 15214591 15007744 7.2G 7 HPFS/NTFS/exFAT
Do you want to expand filesystem(y/n)?y
TARGET_DEVICE_PARTITION_ARRAY=2
TARGET_DEVICE_PARTITION_ARRAY[-1]=1
TARGET_DEVICE_LAST_PARTITION=/dev/sda2
Press any key to continune.

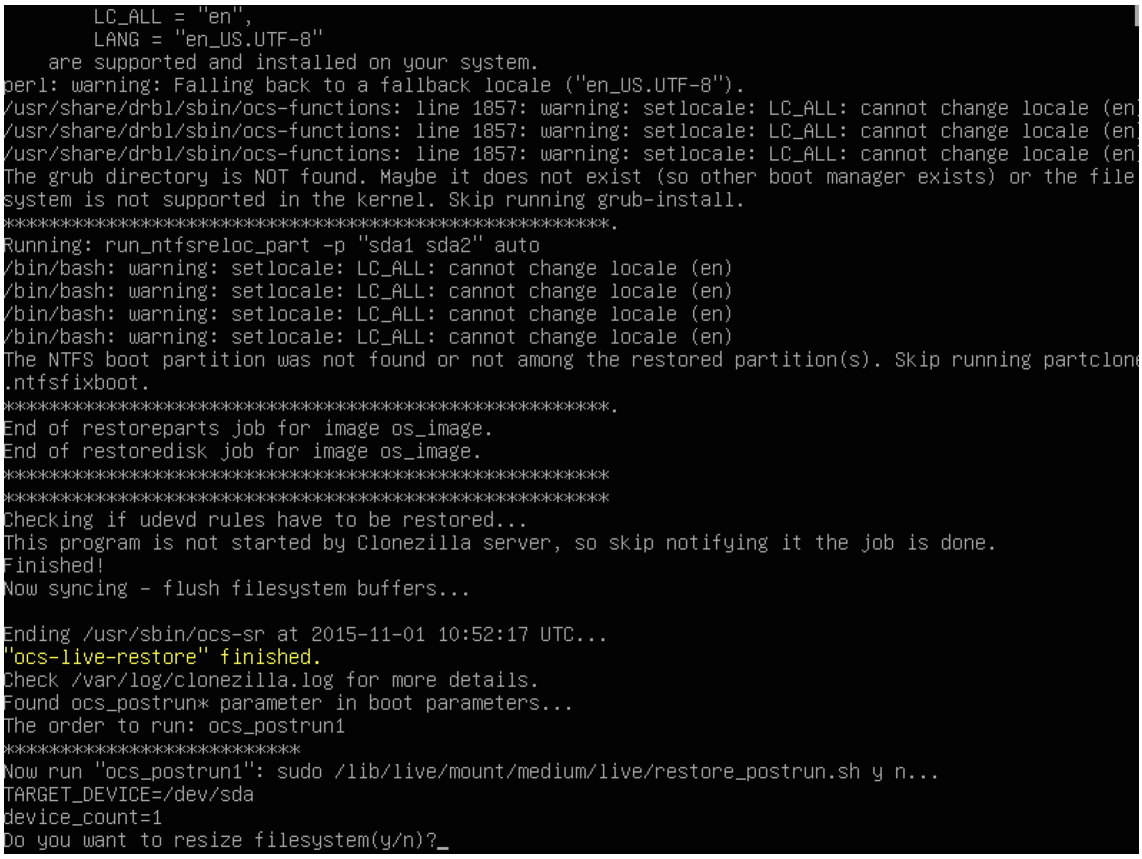
6. Check the system recovery partition details displayed in the console and type **y** at the command prompt to confirm the details. Press **Enter** to continue.


Do NOT create partition table on the client harddisk!
/usr/share/drbl/sbin/ocs-functions: line 10757: warning: setlocale: LC_ALL: cannot change locale (en
/usr/share/drbl/sbin/ocs-functions: line 10739: warning: setlocale: LC_ALL: cannot change locale (en
/usr/share/drbl/sbin/ocs-functions: line 10739: warning: setlocale: LC_ALL: cannot change locale (en
/usr/share/drbl/sbin/ocs-functions: line 10739: warning: setlocale: LC_ALL: cannot change locale (en
perl: warning: Setting locale failed.
perl: warning: Please check that your locale settings:
LANGUAGE = (unset),
LC_ALL = "en",
LANG = "en_US.UTF-8"
are supported and installed on your system.
perl: warning: Falling back to a fallback locale ("en_US.UTF-8").
Activating the partition info in /proc... done!
Getting /dev/sda1 info...
/usr/share/drbl/sbin/ocs-functions: line 3632: warning: setlocale: LC_ALL: cannot change locale (en)
/usr/share/drbl/sbin/ocs-functions: line 3645: warning: setlocale: LC_ALL: cannot change locale (en)
Getting /dev/sda2 info...
/usr/share/drbl/sbin/ocs-functions: line 3632: warning: setlocale: LC_ALL: cannot change locale (en)
/usr/share/drbl/sbin/ocs-functions: line 3645: warning: setlocale: LC_ALL: cannot change locale (en)
****
The following step is to restore an image to the hard disk/partition(s) on this machine: "/home/part
imag/os_image" -> "sda sda1 sda2"
The image was created at: 2015-1020-1521
WARNING!!! WARNING!!! WARNING!!!
WARNING. THE EXISTING DATA IN THIS HARDDISK/PARTITION(S) WILL BE OVERWRITTEN! ALL EXISTING DATA WILL
BE LOST:
****
Machine: VMware Virtual Platform
sda (21.5GB_VMware_Virtual_S_No_disk_serial_no)
sda1 (100M(In_VMware_Virtual_S)_No_disk_serial_no)
sda2 (19.9G(In_VMware_Virtual_S)_No_disk_serial_no)
****
Are you sure you want to continue? (y/n)

7. Reconfirm the system recovery partition details by typing **y** at the command prompt and press **Enter** to continue.

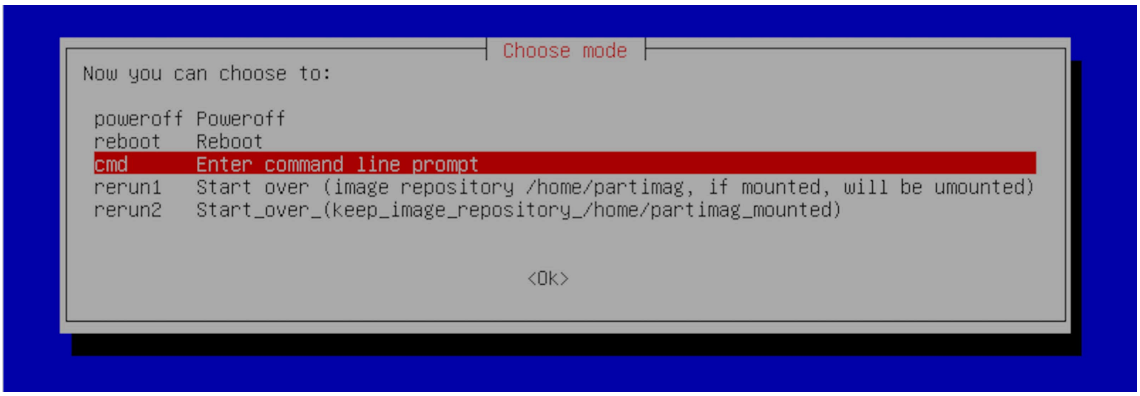

Getting /dev/sda1 info...
/usr/share/drbl/sbin/ocs-functions: line 3632: warning: setlocale: LC_ALL: cannot change locale (en)
/usr/share/drbl/sbin/ocs-functions: line 3645: warning: setlocale: LC_ALL: cannot change locale (en)
Getting /dev/sda2 info...
/usr/share/drbl/sbin/ocs-functions: line 3632: warning: setlocale: LC_ALL: cannot change locale (en)
/usr/share/drbl/sbin/ocs-functions: line 3645: warning: setlocale: LC_ALL: cannot change locale (en)
The following step is to restore an image to the hard disk/partition(s) on this machine: "/home/part
imag/os_image" -> "sda sda1 sda2"
The image was created at: 2015-1020-1521
WARNING!!! WARNING!!! WARNING!!!
WARNING. THE EXISTING DATA IN THIS HARDDISK/PARTITION(S) WILL BE OVERWRITTEN! ALL EXISTING DATA WILL
BE LOST:
Machine: VMware Virtual Platform
sda (21.5GB_VMware_Virtual_S_No_disk_serial_no)
sda1 (100M(In_VMware_Virtual_S)_No_disk_serial_no)
sda2 (19.9G(In_VMware_Virtual_S)_No_disk_serial_no)
Are you sure you want to continue? (y/n) Y
OK, let's do it!!
This program is not started by clonezilla server.
Let me ask you again.
The following step is to restore an image to the hard disk/partition(s) on this machine: "/home/part
imag/os_image" -> "sda sda1 sda2"
The image was created at: 2015-1020-1521
WARNING!!! WARNING!!! WARNING!!!
WARNING. THE EXISTING DATA IN THIS HARDDISK/PARTITION(S) WILL BE OVERWRITTEN! ALL EXISTING DATA WILL
BE LOST:
Machine: VMware Virtual Platform
sda (21.5GB_VMware_Virtual_S_No_disk_serial_no)
sda1 (100M(In_VMware_Virtual_S)_No_disk_serial_no)
sda2 (19.9G(In_VMware_Virtual_S)_No_disk_serial_no)
Are you sure you want to continue? (y/n)

8. Specify if the file system should be resized after the recovery process is complete. Type **y** at the command prompt to resize the file system and press **Enter** to continue.


LC_ALL = "en",
LANG = "en_US.UTF-8"
are supported and installed on your system.
perl: warning: Falling back to a fallback locale ("en_US.UTF-8").
/usr/share/drbl/sbin/ocs-functions: line 1857: warning: setlocale: LC_ALL: cannot change locale (en
/usr/share/drbl/sbin/ocs-functions: line 1857: warning: setlocale: LC_ALL: cannot change locale (en
/usr/share/drbl/sbin/ocs-functions: line 1857: warning: setlocale: LC_ALL: cannot change locale (en
The grub directory is NOT found. Maybe it does not exist (so other boot manager exists) or the file
system is not supported in the kernel. Skip running grub-install.
Running: run_ntfsreloc_part -p "sda1 sda2" auto
/bin/bash: warning: setlocale: LC_ALL: cannot change locale (en)
/bin/bash: warning: setlocale: LC_ALL: cannot change locale (en)
/bin/bash: warning: setlocale: LC_ALL: cannot change locale (en)
/bin/bash: warning: setlocale: LC_ALL: cannot change locale (en)
The NTFS boot partition was not found or not among the restored partition(s). Skip running partclone
.ntfsfixboot.
End of restoreparts job for image os_image.
End of restoredisk job for image os_image.
Checking if udevd rules have to be restored...
This program is not started by Clonezilla server, so skip notifying it the job is done.
Finished!
Now syncing - flush filesystem buffers...
Ending /usr/sbin/ocs-sr at 2015-11-01 10:52:17 UTC...
"ocs-live-restore" finished.
Check /var/log/clonezilla.log for more details.
Found ocs_postrun* parameter in boot parameters...
The order to run: ocs_postrun1
Now run "ocs_postrun1": sudo /lib/live/mount/medium/live/restore_postrun.sh y n...
TARGET_DEVICE=/dev/sda
device_count=1
Do you want to resize filesystem(y/n)?

4. Choose one of the following options and press **Enter** to continue:

Select	to
poweroff	power off the system
reboot	reboot the system
cmd	access the console terminal
rerun1,rerun2	restart the entire procedure


Choose mode
Now you can choose to:
poweroff Poweroff
reboot Reboot
cmd Enter command line prompt
rerun1 Start over (image repository /home/partimag, if mounted, will be umounted)
rerun2 Start_over_(keep_image_repository_/home/partimag_mounted)
<Ok>

Step 4: Resetting the BIOS

Reset the boot priority to the factory default settings to allow the system to boot from the main system storage drive. This is done for two reasons:

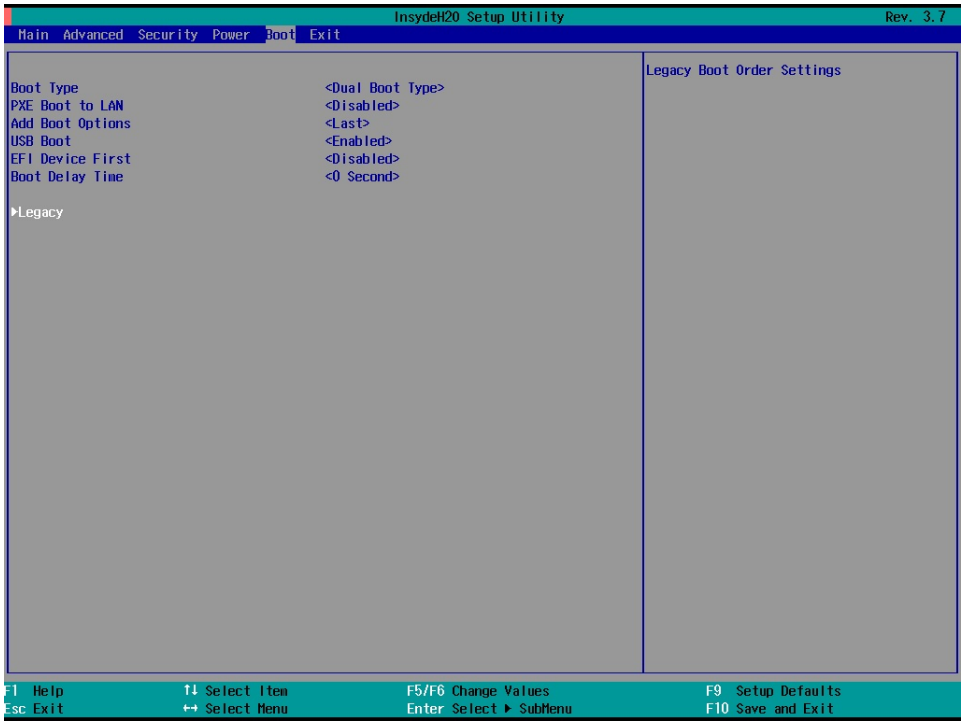
- The first reason is for security, since the computer will not be able to be rebooted from unauthorized USB drives.
- The second reason is because the computer is able to boot up from a non-bootable USB drive. Currently, if the V2201 is set to boot from a USB drive, the V2201's boot process stops anytime you insert a non-bootable USB data drive into the machine. The V2201 cannot detect USB data drives and boot-capable OS drives.

Complete the following steps to reset the boot priority setting:

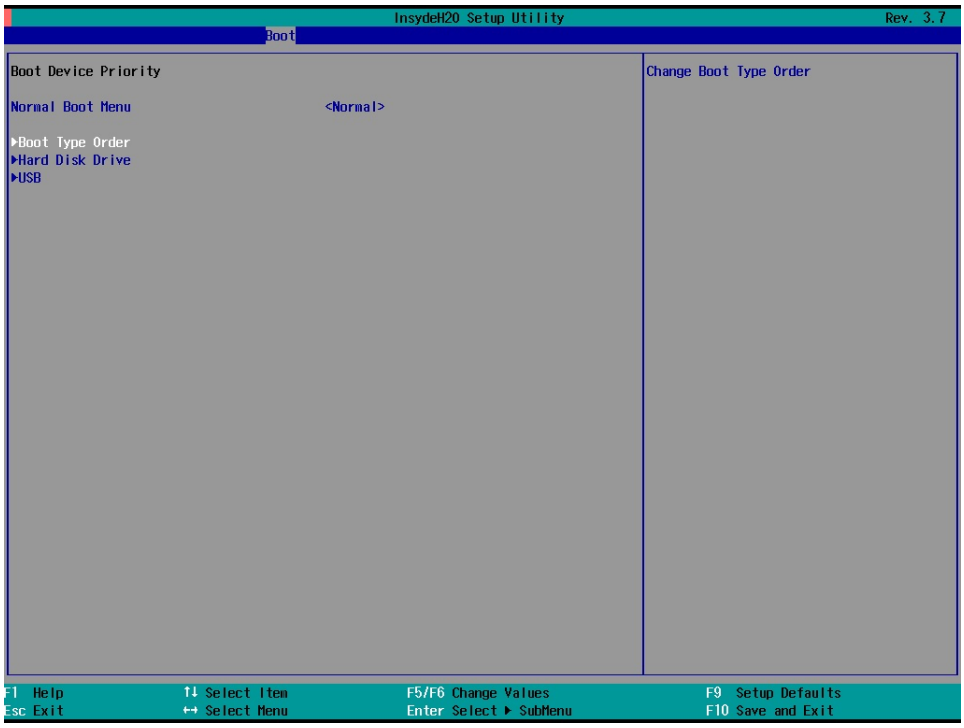
1. Reboot the system, and, during the POST process, press **F2** until you hear a long beep. Click **SCU** to enter the BIOS setup menu.

2. Use the left and right arrow keys to navigate to the **Boot** menu; then, press [Enter].

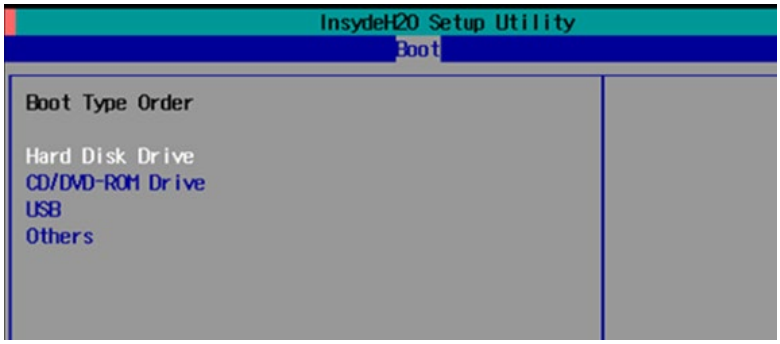
3. Use the up and down arrows to navigate to the **Legacy** link; then, press [Enter].



4. Use the up and down arrow keys to navigate to the **Boot Type Order** link; then, press [Enter].



5. Use the up and down arrows to highlight **Hard Disk Drive** and use the plus or minus (+/-) key to move **Hard Disk Drive** to the top of the boot priority list.



6. Press **F10** and [Enter] to save and exit the BIOS configuration interface. This sets the system to reboot, and the system should now boot from the hard drive.

   For more information about initializing user settings, refer to the **System Initialization** chapter.

Creating a Custom System Image

In this section, we describe the procedure to create a custom backup image for your system. We recommend that you create and store backup images of your system on a regular basis so that you can restore your system to the last know good state when your system crashes. The procedure described here will help you save a copy of your entire system along with the current configuration settings to a USB drive. The backup files are stored under the **\home\partimag** folder in the USB drive and are overwritten each time you create a backup for your system.

Prerequisites

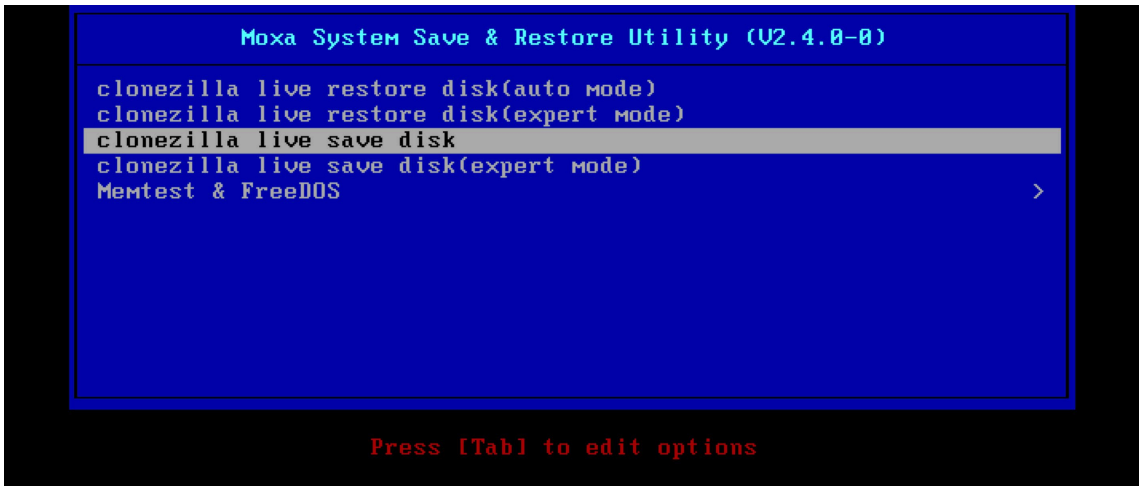
Before you proceed with the custom backup, ensure that you have completed the following steps described in the *'Setting Up a Factory Default Recovery Image'* section:

Step 1: Preparing the USB drive

Step 2: Set the BIOS to Boot via USB

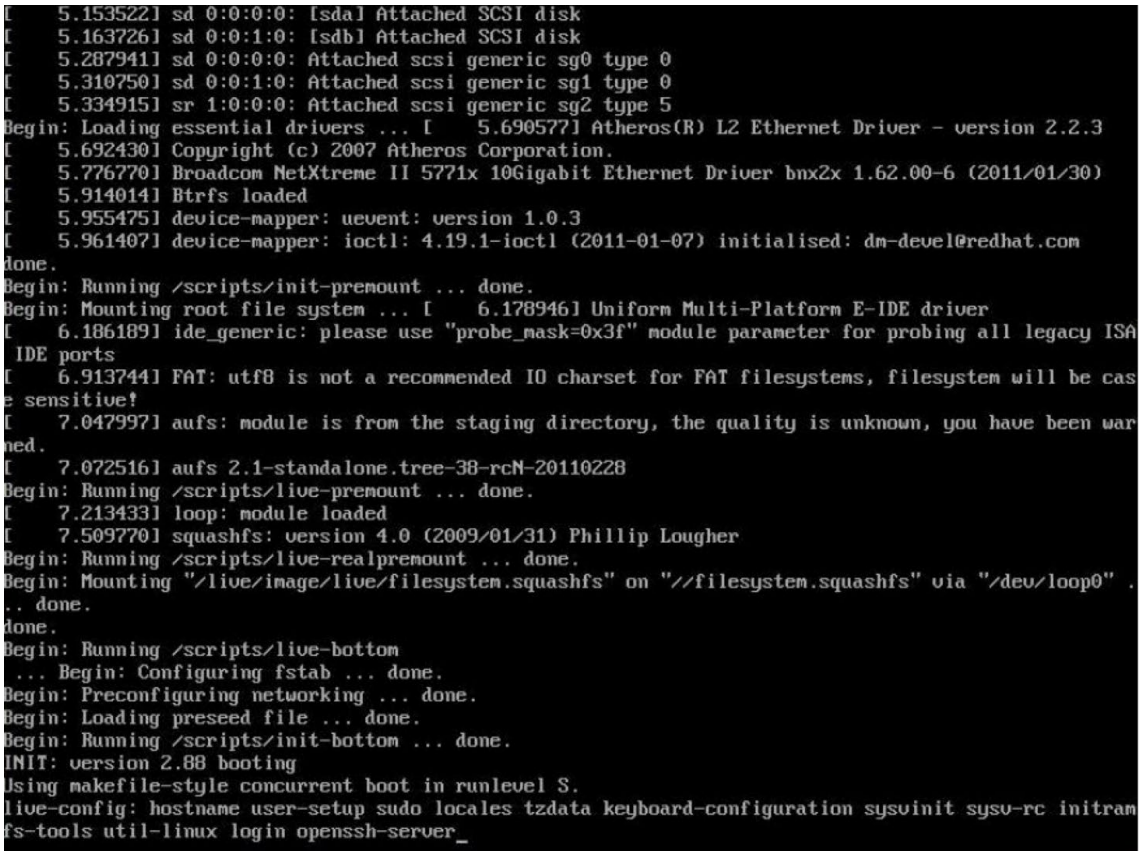
Auto mode:

1. Select the **clonezilla live save disk** option in the boot loader window to boot the system in auto mode for system backup.


Moxa System Save & Restore Utility (V2.4.0-0)
clonezilla live restore disk(auto mode)
clonezilla live restore disk(expert mode)
clonezilla live save disk
clonezilla live save disk(expert mode)
Memtest & FreeDOS
Press [Tab] to edit options

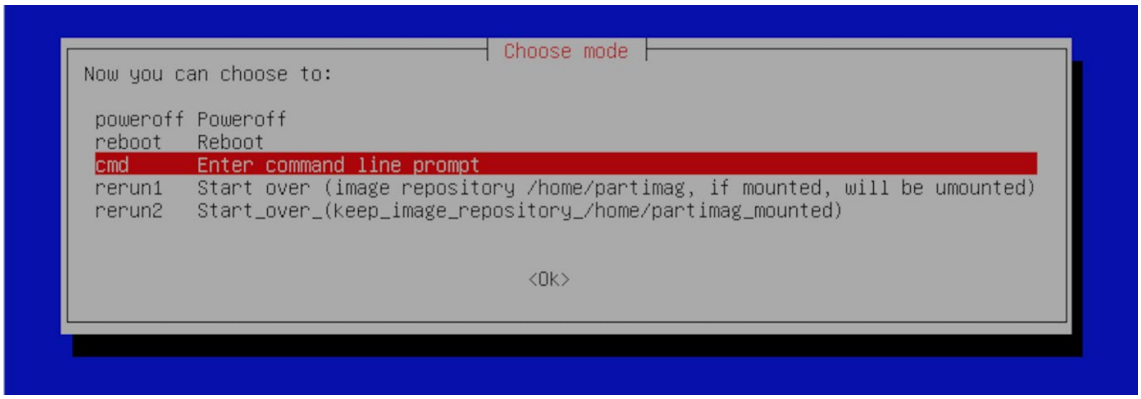
2. Wait until the boot process is complete.

NOTE You can press any key or use **CTRL+C** to cancel the backup process and exit Clonezilla.


[5.153522] sd 0:0:0:0: [sda] Attached SCSI disk
[5.163726] sd 0:0:1:0: [sdb] Attached SCSI disk
[5.287941] sd 0:0:0:0: Attached scsi generic sg0 type 0
[5.310750] sd 0:0:1:0: Attached scsi generic sg1 type 0
[5.334915] sr 1:0:0:0: Attached scsi generic sg2 type 5
Begin: Loading essential drivers ... [5.690577] Atheros(R) L2 Ethernet Driver - version 2.2.3
[5.692430] Copyright (c) 2007 Atheros Corporation.
[5.776770] Broadcom NetXtreme II 5771x 10Gigabit Ethernet Driver bnx2x 1.62.00-6 (2011/01/30)
[5.914014] Btrfs loaded
[5.955475] device-mapper: uevent: version 1.0.3
[5.961407] device-mapper: ioctl: 4.19.1-ioctl (2011-01-07) initialised: dm-devel@redhat.com
done.
Begin: Running /scripts/init-premount ... done.
Begin: Mounting root file system ... [6.178946] Uniform Multi-Platform E-IDE driver
[6.186189] ide_generic: please use "probe_mask=0x3f" module parameter for probing all legacy ISA
IDE ports
[6.913744] FAT: utf8 is not a recommended IO charset for FAT filesystems, filesystem will be cas
e sensitive!
[7.047997] aufs: module is from the staging directory, the quality is unknown, you have been war
ned.
[7.072516] aufs 2.1-standalone.tree-38-rcN-20110228
Begin: Running /scripts/live-premount ... done.
[7.213433] loop: module loaded
[7.509770] squashfs: version 4.0 (2009/01/31) Phillip Lougher
Begin: Running /scripts/live-realpremount ... done.
Begin: Mounting "/live/image/live/filesystem.squashfs" on "//filesystem.squashfs" via "/dev/loop0" .
.. done.
done.
Begin: Running /scripts/live-bottom
... Begin: Configuring fstab ... done.
Begin: Preconfiguring networking ... done.
Begin: Loading preseed file ... done.
Begin: Running /scripts/init-bottom ... done.
INIT: version 2.88 booting
Using makefile-style concurrent boot in runlevel S.
live-config: hostname user-setup sudo locales tzdata keyboard-configuration sysvinit sysv-rc initram
fs-tools util-linux login openssh-server_

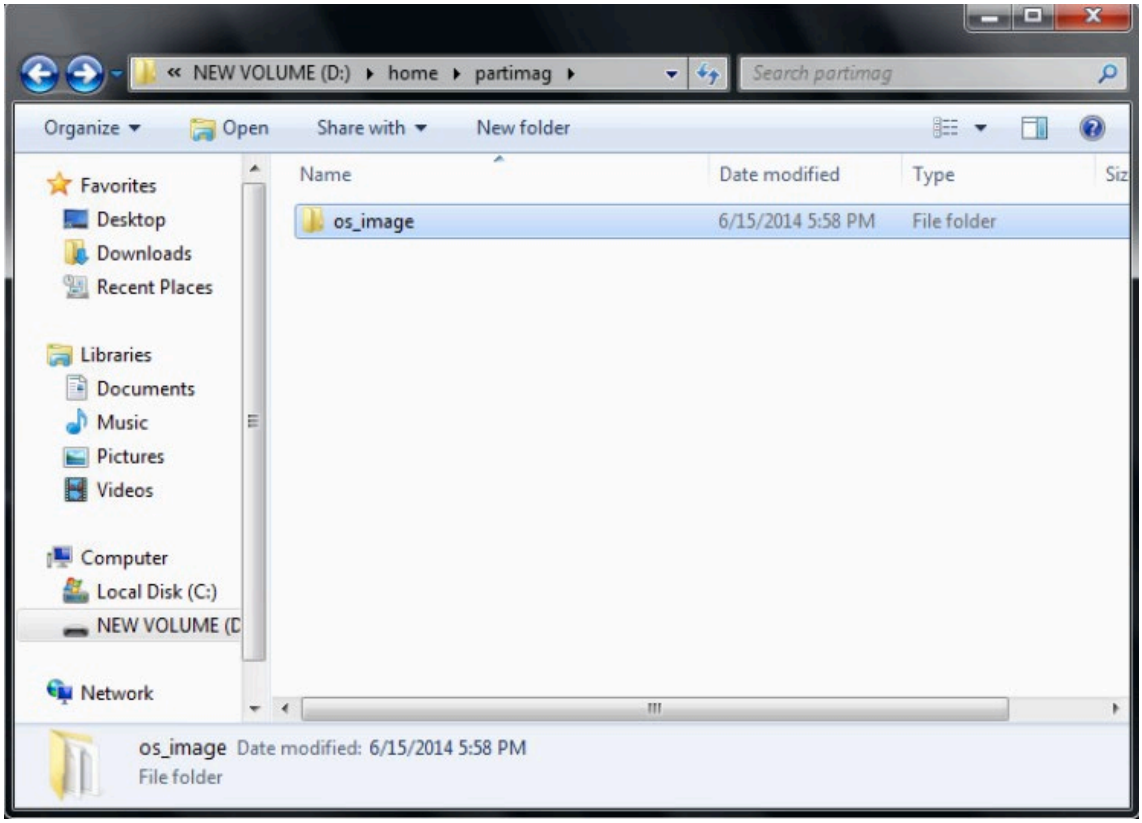
3. Choose one of the following options and press **Enter** to continue:

Select	to
poweroff	power off the system
reboot	reboot the system
cmd	access the console terminal
rerun1,rerun2	restart the entire procedure


Choose mode
Now you can choose to:
poweroff Poweroff
reboot Reboot
cmd Enter command line prompt
rerun1 Start over (image repository /home/partimag, if mounted, will be umounted)
rerun2 Start_over_(keep_image_repository_/home/partimag_mounted)
<Ok>

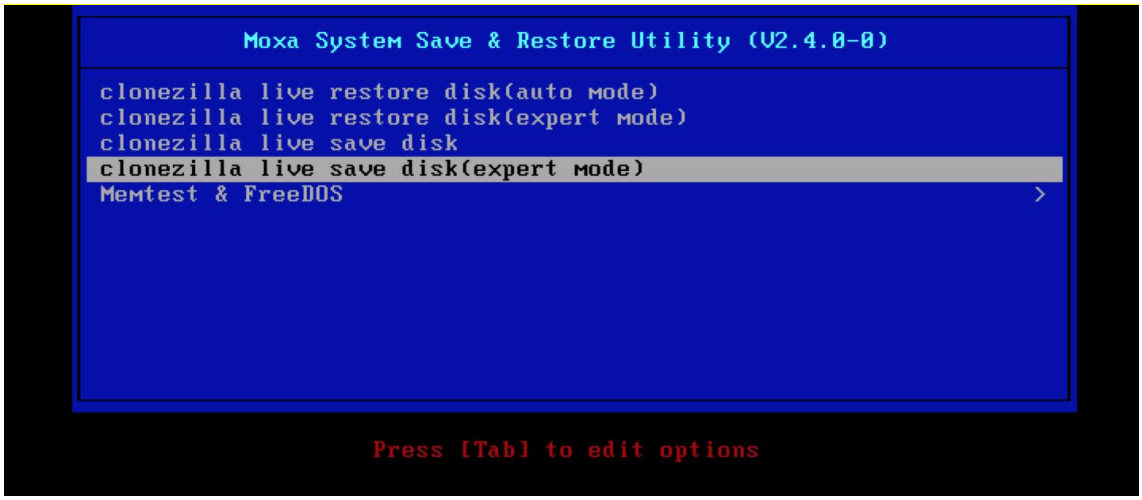
4. Power down the system and remove the USB drive.

   The system backup process is now complete. The backup image file is located in the **home\partimag\os_image** folder of the USB drive. Label the USB drive and store it in a safe place.



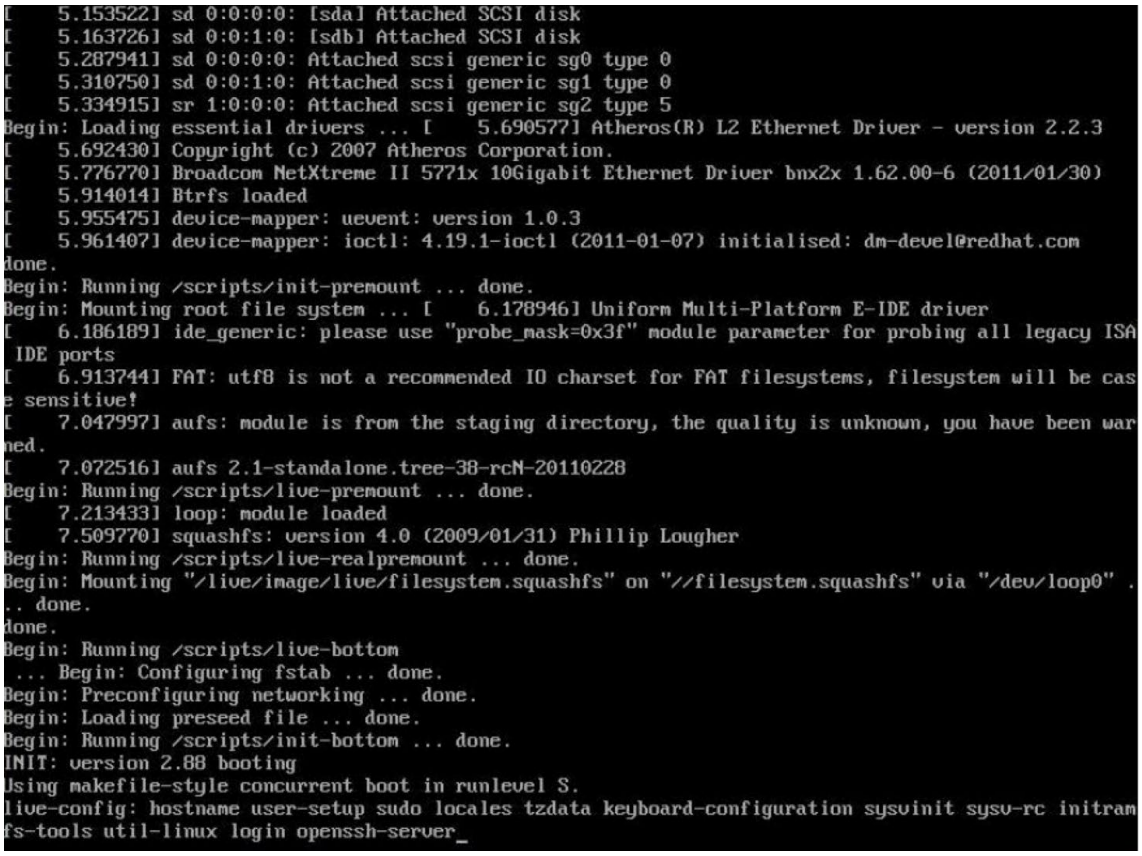
Expert mode:

1. Select the **clonezilla live save disk(expert Mode)** option in the boot loader window to boot the system in expert mode for system backup.

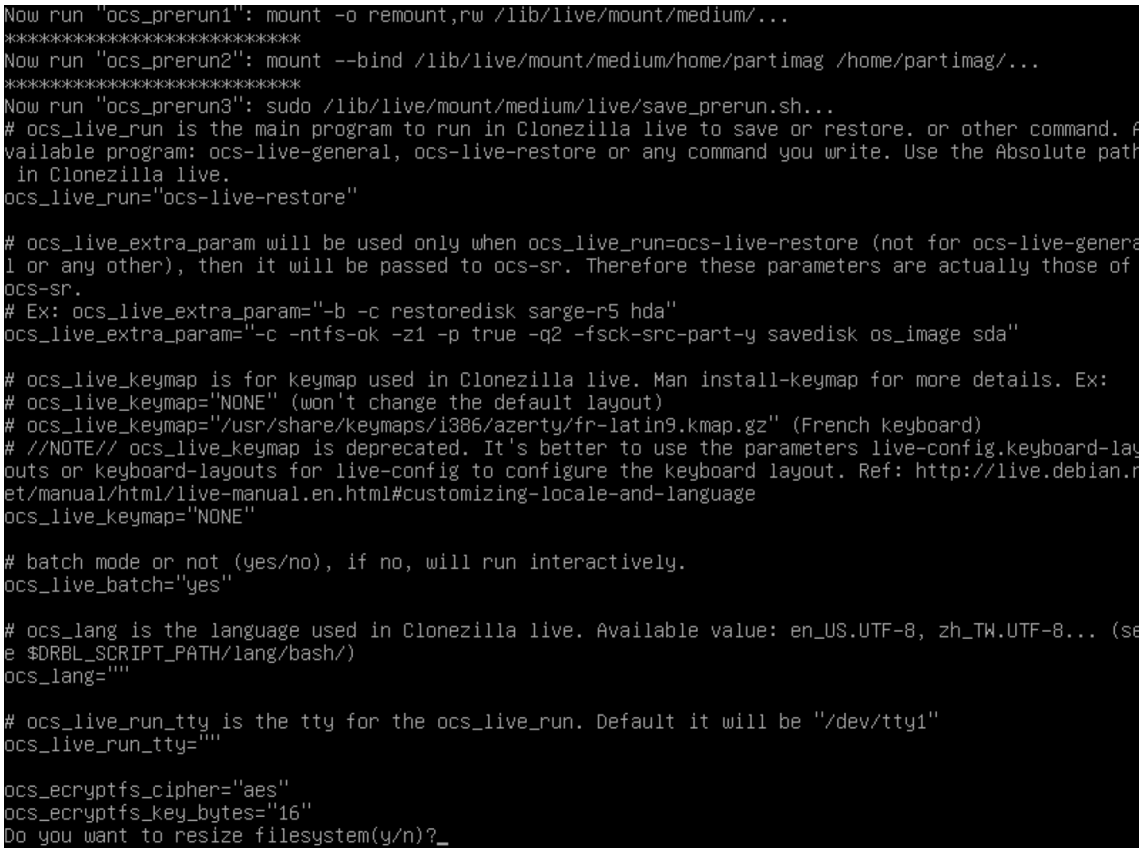

Moxa System Save & Restore Utility (V2.4.0-0)
clonezilla live restore disk(auto mode)
clonezilla live restore disk(expert mode)
clonezilla live save disk
clonezilla live save disk(expert mode)
Memtest & FreeDOS
Press [Tab] to edit options

2. Wait until the boot process is complete.

NOTE You can press any key or use **CTRL+C** to cancel the backup process and exit Clonezilla.

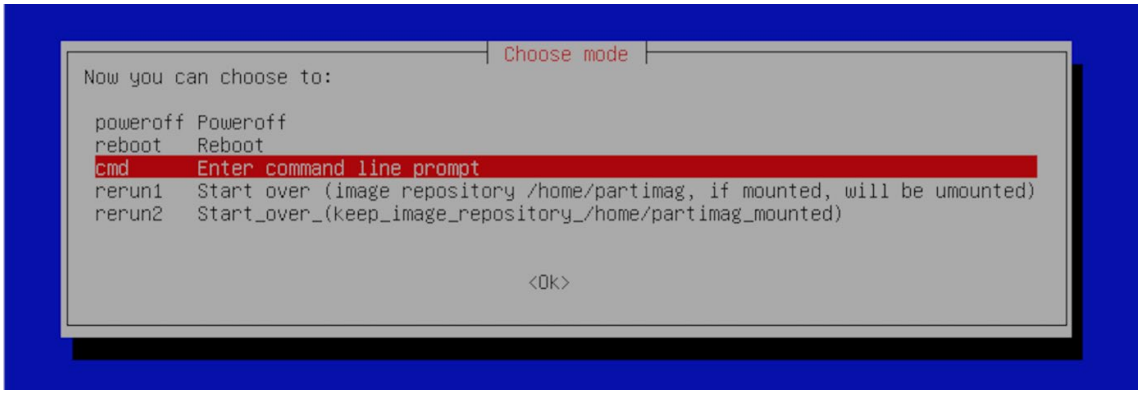

[5.153522] sd 0:0:0:0: [sda] Attached SCSI disk
[5.163726] sd 0:0:1:0: [sdb] Attached SCSI disk
[5.287941] sd 0:0:0:0: Attached scsi generic sg0 type 0
[5.310750] sd 0:0:1:0: Attached scsi generic sg1 type 0
[5.334915] sr 1:0:0:0: Attached scsi generic sg2 type 5
Begin: Loading essential drivers ... [5.690577] Atheros(R) L2 Ethernet Driver - version 2.2.3
[5.692430] Copyright (c) 2007 Atheros Corporation.
[5.776770] Broadcom NetXtreme II 5771x 10Gigabit Ethernet Driver bnx2x 1.62.00-6 (2011/01/30)
[5.914014] Btrfs loaded
[5.955475] device-mapper: uevent: version 1.0.3
[5.961407] device-mapper: ioctl: 4.19.1-ioctl (2011-01-07) initialised: dm-devel@redhat.com
done.
Begin: Running /scripts/init-premount ... done.
Begin: Mounting root file system ... [6.178946] Uniform Multi-Platform E-IDE driver
[6.186189] ide_generic: please use "probe_mask=0x3f" module parameter for probing all legacy ISA
IDE ports
[6.913744] FAT: utf8 is not a recommended IO charset for FAT filesystems, filesystem will be cas
e sensitive!
[7.047997] aufs: module is from the staging directory, the quality is unknown, you have been war
ned.
[7.072516] aufs 2.1-standalone.tree-38-rcN-20110228
Begin: Running /scripts/live-premount ... done.
[7.213433] loop: module loaded
[7.509770] squashfs: version 4.0 (2009/01/31) Phillip Lougher
Begin: Running /scripts/live-realpremount ... done.
Begin: Mounting "/live/image/live/filesystem.squashfs" on "//filesystem.squashfs" via "/dev/loop0" .
.. done.
done.
Begin: Running /scripts/live-bottom
... Begin: Configuring fstab ... done.
Begin: Preconfiguring networking ... done.
Begin: Loading preseed file ... done.
Begin: Running /scripts/init-bottom ... done.
INIT: version 2.88 booting
Using makefile-style concurrent boot in runlevel S.
live-config: hostname user-setup sudo locales tzdata keyboard-configuration sysvinit sysv-rc initram
fs-tools util-linux login openssh-server_

3. Specify if the file system should be resized after the backup process is complete. Type **y** at the command prompt to resize the file system and press **Enter** to continue.


Now run "ocs_prerun1": mount -o remount,rw /lib/live/mount/medium/...
****
Now run "ocs_prerun2": mount --bind /lib/live/mount/medium/home/partimag /home/partimag/...
****
Now run "ocs_prerun3": sudo /lib/live/mount/medium/live/save_prerun.sh...
ocs_live_run is the main program to run in Clonezilla live to save or restore. or other command. A
vailable program: ocs-live-general, ocs-live-restore or any command you write. Use the Absolute path
in Clonezilla live.
ocs_live_run="ocs-live-restore"
# ocs_live_extra_param will be used only when ocs_live_run=ocs-live-restore (not for ocs-live-genera
l or any other), then it will be passed to ocs-sr. Therefore these parameters are actually those of
ocs-sr.
# Ex: ocs_live_extra_param="-b -c restoredisk sarge-r5 hda"
ocs_live_extra_param="-c -ntfs-ok -z1 -p true -q2 -fsck-src-part-y savedisk os_image sda"
# ocs_live_keymap is for keymap used in Clonezilla live. Man install-keymap for more details. Ex:
# ocs_live_keymap="NONE" (won't change the default layout)
# ocs_live_keymap="/usr/share/keymaps/i386/azerty/fr-latin9.kmap.gz" (French keyboard)
# //NOTE// ocs_live_keymap is deprecated. It's better to use the parameters live-config.keyboard-lay
outs or keyboard-layouts for live-config to configure the keyboard layout. Ref: http://live.debian.n
et/manual/html/live-manual.en.html#customizing-locale-and-language
ocs_live_keymap="NONE"
# batch mode or not (yes/no), if no, will run interactively.
ocs_live_batch="yes"
# ocs_lang is the language used in Clonezilla live. Available value: en_US.UTF-8, zh_TW.UTF-8... (se
e $DRBL_SCRIPT_PATH/lang/bash/)
ocs_lang=""
# ocs_live_run_tty is the tty for the ocs_live_run. Default it will be "/dev/tty1"
ocs_live_run_tty=""
ocs_ecryptfs_cipher="aes"
ocs_ecryptfs_key_bytes="16"
Do you want to resize filesystem(y/n)?_

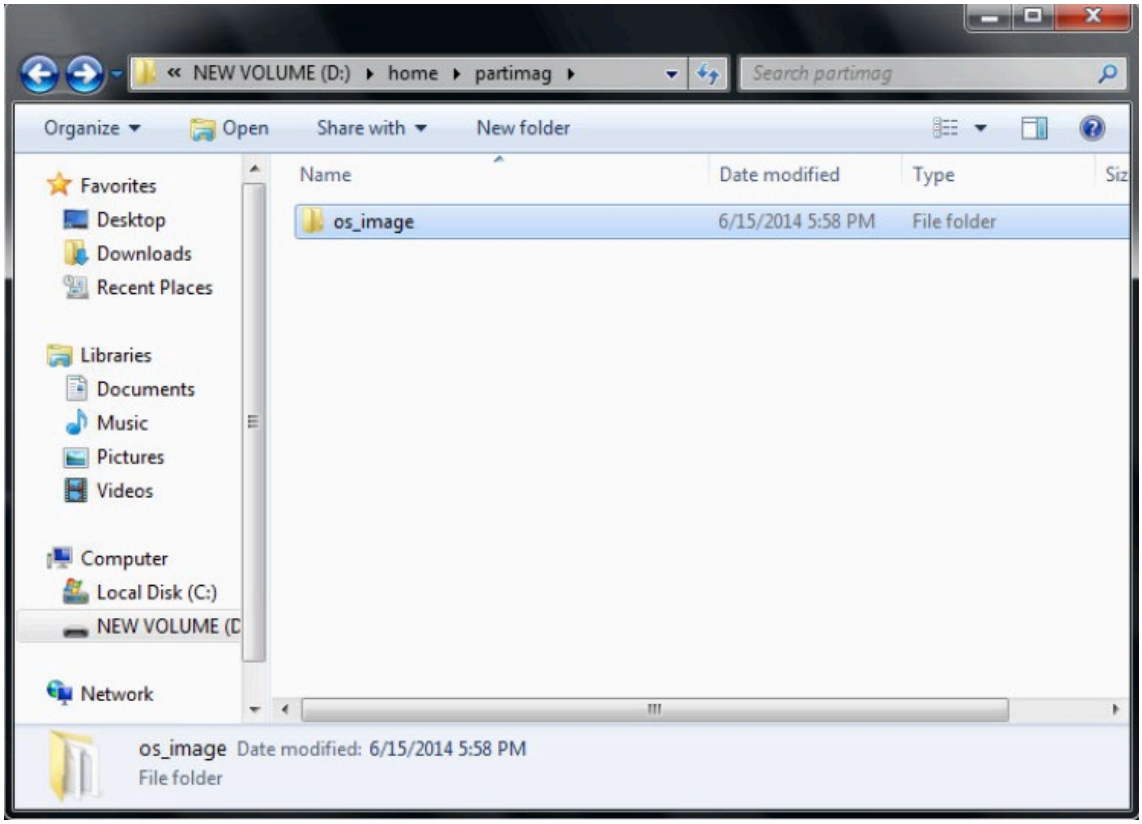
4. Choose one of the following options and press **Enter** to continue:

Select	to
poweroff	power off the system
reboot	reboot the system
cmd	access the console terminal
rerun1,rerun2	restart the entire procedure


Choose mode
Now you can choose to:
poweroff Poweroff
reboot Reboot
cmd Enter command line prompt
rerun1 Start over (image repository /home/partimag, if mounted, will be umounted)
rerun2 Start_over_(keep_image_repository_/home/partimag_mounted)
<Ok>

5. Power down the system and remove the USB drive.

   The system backup process is now complete. The backup image file is located in the **home\partimag\os_image** folder of the USB drive. Label the USB drive and store it in a safe place.



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Proactive Monitoring

The V2201 series supports the "Moxa Proactive Monitoring" utility. See the "Moxa Proactive Monitoring Windows Software User's Manual" for details. The manual can be found on the product CD/DVD or downloaded from Moxa's website. Note that the V2201 does not support hardware relay.